COULTER® GEN•S™ System

Special Procedures and Troubleshooting

PN 4237223D (April 1999)
COULTER CORPORATION
Miami, Florida 33196

LEGAL NOTES

READ ALL PRODUCT MANUALS AND CONSULT WITH COULTER-TRAINED PERSONNEL
BEFORE ATTEMPTING TO OPERATE INSTRUMENT.

HAZARDS AND OPERATIONAL PRECAUTIONS AND LIMITATIONS

WARNINGS, CAUTIONS, and IMPORTANTS alert you as follows:

WARNING - Might cause injury.
CAUTION - Might cause damage to the instrument.
IMPORTANT - Might cause misleading results.

CAUTION System integrity might be compromised and operational failures might occur if:

- This equipment is used in a manner other than specified. Operate the instrument as instructed in the Product Manuals.
- You introduce software that is not authorized by Coulter into your computer. Only operate your system's computer with software authorized by Coulter.
- You install software that is not an original copyrighted version. Only use software that is an original copyrighted version to prevent virus contamination.

Coulter Corporation urges its customers to comply with all national health and safety standards such as the use of barrier protection. This may include, but it is not limited to, protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this or any other automated laboratory analyzer.

WARNING Risk of operator injury if all covers are not secured in place prior to instrument operation or you attempt to replace a part without carefully reading the replacement instructions. Do not attempt to replace any component until you carefully read the instructions for replacing the component.

IMPORTANT If you purchased this product from anyone other than Coulter or an authorized Coulter distributor, and, if it is not presently under a Coulter service maintenance agreement, Coulter cannot guarantee that the product is fitted with the most current mandatory engineering revisions or that you will receive the most current information bulletins concerning the product. If you purchased this product from a third party and would like further information concerning this topic, call your Coulter Representative.

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This introductory section contains the following topics:

- How to use your COULTER GEN•S System hard-copy manuals
- About this manual
- Online Help.

HOW TO USE YOUR COULTER GEN•S SYSTEM HARD-COPY MANUALS

Use the **Getting Started** booklet to see an overview of the system hardware and software. This document comes with your GEN•S System.

Use the **Reference** manual for in-depth information about what the instrument does, the methods it uses, its specifications, and information on installation and safety. The Reference manual for the GEN•S System is included online; it is available in hard copy by request.

Use the **Special Procedures and Troubleshooting** manual to run calibration; to clean, replace or adjust a component on the instrument; and for troubleshooting. This document is made up of procedures from the Online Help System; it is available in hard copy by request.

Use the **Operator's Guide** for the day-to-day operation of your instrument. This document is made up of procedures from the Online Help System; it includes Startup, running controls and samples, reviewing data, Shutdown, and the software on the Analyzer and the Workstation. This document is available in hard copy by request.

Use the **Master Index** to easily locate a subject in your hard-copy Reference Manual, Operator's Guide and Special Procedures and Troubleshooting manual. The Master Index comes with the hard copy of both the Operator's Guide and the Special Procedures and Troubleshooting manual.

Use the **Host Transmission Specification** to find the information needed to program the transmission interface between the GEN•S System and your laboratory's host computer. This document comes with your GEN•S System.

See the Documentation page on the back cover of this manual for the contents of each manual.

ABOUT THIS MANUAL

Your GEN•S System Special Procedures and Troubleshooting manual is organized as follows:

- Chapter 1, Calibration
  Provides procedures for reproducibility, carryover, calibration with S-CAL calibrator and calibration with whole blood.
- Chapter 2, Cleaning Procedures
  Provides procedures for cleaning parts of the system.
- Chapter 3, Replacement Procedures
  Provides procedures for replacing parts of the system.
- Chapter 4, Adjustment Procedures
  Provides procedures for adjusting parts of the system.
- Chapter 5, Troubleshooting
  Provides an overview of troubleshooting concepts, describes the Diluter keypad

functions, lists the solenoids, describes how to reset the Analyzer and the Workstation, describes the Workstation logs, and lists the error messages.

- Chapter 6, Error Messages
  Provides a list of all the error messages that appear on the system.
- Index
  Provides an alphabetical list of special procedures and troubleshooting subjects--messages, terms, and procedures--with the page numbers where you can find related information.
- Glossary
  Provides a collection of GEN•S System terms with their meanings.
- Master Index
  Provides an alphabetical list of GEN•S System subjects with book references and page numbers where you can find related information.

ONLINE HELP

The GEN•S Workstation has a comprehensive Online Help System, which includes the Reference manual, plus all operating, maintenance and troubleshooting procedures. On the GEN•S Workstation, select to access Help.

1.1 OVERVIEW

Calibration fine-tunes the GEN•S System so it provides the most accurate results possible.

Your laboratory is responsible for the final calibration of the CBC parameters and for recording the calibration factors. Coulter recommends S-CAL® calibrator, or an exact equivalent, as an acceptable alternative to whole-blood calibration.

In the normal process of tracking data for an extended period of time, your laboratory can make a specific decision to recalibrate a given parameter. Never adjust to a specific value for an individual sample.

For best performance, calibrate all the CBC parameters. The WBC differential and Retic parameters are calibrated at the factory; they do not require calibration in the laboratory.

When to Calibrate

You should calibrate your instrument:

- At installation
- After the replacement of any component that involves dilution characteristics (such as the BSV) or the primary measurements (such as the apertures)
- When advised to do so by your Coulter Representative.

You should verify the calibration of your instrument:

- As dictated by your laboratory procedures, local or national regulations
- When controls begin to show evidence of unusual trends
- When controls exceed the manufacturer's defined acceptable limits
- If the average ambient room temperature changes more than 10°F from the calibrating temperature.

1.2 PERFORMING REPRODUCIBILITY CHECK -- CBC (N=10)

Sample Requirements

For reproducibility studies, ensure the patient for the sample:

- Is receiving no medication
- Has normal hematologic parameters, with a WBC count of 10,000 ±1,000
- Has normal erythrocyte, leukocyte and platelet morphology and, if you want to check the Diff parameters, with Diff values:

Neutrophils	40 to 72%
Lymphocytes	17 to 45%
Monocytes	4 to 12%
Eosinophils	0 to 10%
Basophils	0 to 1%

Procedure

1. Ensure you have enough normal whole blood from a single donor for 11 cycles.
2. Ensure pneumatics are on.
3. Ensure the blood detector is enabled.
4. Ensure the number of aspirations per tube is set to 1.
5. If necessary, select the instrument name on the Command Center.
6. Select **REPRODUCIBILITY** as the processing control on the Command Center.
7. If necessary, select on the Reproducibility window to clear out the values that appear on the results table.

   Note: If you want to view the reproducibility results as the Workstation receives them, you can access the Reproducibility window (step 12) before proceeding. The background of the Reproducibility window, for the selected instrument, changes to the same background as the Command Center when you change the processing control to **REPRODUCIBILITY**.
8. Cycle one sample of normal whole blood in Automatic aspiration mode.

WARNING Needle damage can occur if you pierce a specimen tube more than five times. Do not pierce a specimen tube more than five times.

9. Set the number of aspirations per tube to 5.
10. Separate the well-mixed normal whole-blood sample into two tubes.
11. Place the tubes into consecutive positions in a cassette and place the cassette in the loading bay. The system automatically begins processing the cassette. It pierces, aspirates, and analyzes the samples.
12. Review the reproducibility results.

1.3 REVIEWING REPRODUCIBILITY RESULTS

Note: To perform this task, you must log on with a user name that was set up as an Advanced Operator or Lab Administrator. If you need to access this function, contact your laboratory administrator.

1. Select on the Command Center to display the Quality Assurance application.
2. Select to display the Reproducibility window.
3. If necessary, select the instrument to review.
4. Review the results table and statistics table on the window. Use the scroll bars to review results that do not appear on the window.
5. Verify that the CV (Coefficient of Variation) does not exceed the established limits. If any instrument results exceed these limits, an instrument problem may exist. Call your Coulter Representative.

Reproducibility Limits for CBC

Parameter	%CV
WBC	<= 2.5
RBC	<= 0.8
Hgb	<= 0.8
MCV	<= 0.8
Plt	<= 3.2
MPV	<= 5.0

1.4 PERFORMING CARRYOVER CHECK

Procedure

1. Ensure pneumatics are on.
2. Ensure the blood detector is disabled.
3. Ensure the mode of operation is set to CBC. You can perform carryover check using other operating modes, however the procedure will take longer and use excess reagents.
4. Ensure the number of aspirations per tube is set to 1.
5. If necessary, select the instrument name on the Command Center.
6. Select **CARRYOVER** as the processing control on the Command Center.
7. If necessary, select on the Carryover window to clear out the values that appear on the results table.

   Note: If you want to view the carryover results as the Workstation receives them, you can access the Carryover window (step 14) before proceeding. The background of the Carryover window, for the selected instrument, changes to the same background as the Command Center when you change the processing control to **CARRYOVER**.
8. Obtain a normal whole-blood specimen.
9. Separate the well-mixed normal whole-blood specimen into two 5 mL tubes.
10. Place the tubes into consecutive positions in a cassette.
11. Dispense 2 to 3 mL of diluent into three separate 5 mL tubes.
12. Place the three diluent tubes in the same cassette. Place the tubes after the whole-blood specimens.
13. Place the cassette in the loading bay. The instrument begins processing the cassette automatically.
14. Verify the carryover results.

Carryover Formula

The GEN•S software calculates the percent carryover by using:

(1st diluent - 3d diluent) / 2d sample x 100 = % carryover

1.5 REVIEWING CARRYOVER RESULTS

Note: To perform this task, you must log on with a user name that was set up as an Advanced Operator or Lab Administrator. If you need to access this function, contact your laboratory administrator.

1. Select on the Command Center to display the Quality Assurance application.
2. Select to display the Carryover window.
3. If necessary, select the instrument to review.
4. Verify that the message **CARRYOVER ACCEPTABLE** appears on the Carryover window. If Carryover is unacceptable, the unacceptable values appear flagged. Review the results table and the limits table.

   Note: If negative carryover values persist, and the third diluent is higher than the first two, check background. If the problem persists, an instrument problem may exist, call your Coulter Representative.

5. Select to print the carryover results for your logbook.

1.6 CALIBRATING CBC PARAMETERS WITH S-CAL® CALIBRATOR

Summary

A. Ensure the apertures are clean.

B. Ensure the instrument is functioning properly.

C. Perform a 10-sample reproducibility study on the CBC parameters using Automatic aspiration mode.

D. Perform carryover.

E. Prepare the instrument for calibration.

F. Set up the CBC calibration information at the Workstation.

G. Run S-CAL calibrator.

H. Review results on the Calibration window.

I. Adjust parameters as needed.

J. Verify calibration by cycling each level of COULTER 5C cell control in Automatic aspiration mode.

Procedure

A Ensure the apertures are clean.

If the instrument is shut down, and you routinely shut down the instrument for at least 30 minutes every 24 hours in COULTER CLENZ® cleaning agent, cleaning is unnecessary.

If you routinely use COULTER CLENZ cleaning agent, but you are beginning calibration after processing patient samples, shut down the instrument in the cleaning agent for 30 minutes before proceeding.

CAUTION Possible flow cell damage could occur if you aspirate bleach. Do not aspirate bleach.

If you do not routinely use COULTER CLENZ cleaning agent, bleach the apertures before proceeding.

B Ensure the instrument is functioning properly.

1. Check the reagent containers for:
   - Sufficient quantity
   - Not beyond expiration date
   - No precipitates, turbidity, particulate matter, or unusual color.
2. Proper connections between the Diluter and the reagent containers.

WARNING Biohazardous materials might be contained in the waste chamber and could cause contamination unless handled with care. Avoid skin contact. Clean up spills immediately. Follow your laboratory's protocol for safety measures.

3. Check the waste container for:
   - Sufficient capacity
   - Proper connections.
4. Perform daily startup.
5. In addition to verifying daily startup results, verify acceptable:
   - Reproducibility
   - Carryover
   - Control results.

C Perform a 10-sample reproducibility study on the CBC parameters using Automatic aspiration mode.

See Heading 1.2, Performing Reproducibility Check--CBC (N=10)

D Perform Carryover.

See Heading 1.4, Performing Carryover Check.

E Prepare the instrument for calibration.

1. Ensure room temperature is stable and within the normal ambient temperature range. If the average ambient room temperature changes more than 10°F from the calibrating temperature, verify calibration and recalibrate (if necessary).
2. Ensure the blood detector is enabled.
3. Ensure the test mode is CBC.
4. Go to the Diluter Keypad.
5. Press

if necessary to activate pneumatics.
6. Cycle a sample of normal whole blood in Automatic aspiration mode as a prime.

IMPORTANT Misleading results could occur if all calibration factors are 1.000. If all calibration factors are 1.000, specify the last valid set of calibration factors from your logbook at the Analyzer.

7. Set the number of aspirations per tube to 11.

F Set up CBC calibration information at the Workstation.

Note: To perform this task, you must log on with a user name that was set up as an Advanced Operator or Lab Administrator. If you need to access this function, contact your laboratory administrator.

1. On the Command Center, select the instrument you want to calibrate if you have more than one instrument connected to your Workstation.
2. On the Command Center, select **CALIBRATION** as the processing control.
3. Select to display the Quality Assurance application.
4. Select to display the Calibration window.

   Note: The background of the Calibration window, for the selected instrument, changes to the same background as the Command Center when you change the processing control to **CALIBRATION**.
5. If necessary, select the instrument you want to calibrate.
6. If necessary, select to record the old calibration information in its history log and delete the information from the database. The values on the window change to 0.00.
7. If you have already set up calibration information, check that the appropriate lot number for calibration is selected; otherwise, set up new calibration information.

G Run S-CAL Calibrator.

IMPORTANT Misleading results could occur if you fail to perform the calibration procedure within 1 hour of opening the S-CAL calibrator vials. Follow the instructions in the S-CAL calibrator package insert.

1. Prepare the S-CAL calibrator according to the instructions in the package insert.
2. Place the vial of S-CAL calibrator in position 1 of a cassette, and place the cassette in the loading bay.

   This automatically begins processing the cassette. The system pierces, aspirates and analyzes the S-CAL calibrator 11 times. The Workstation automatically deletes the results from the first sample because the results are used as a prime.

H Review results on the Calibration window.

Note: Prior to performing this procedure, you must perform steps 1 through 7 of the appropriate calibration procedure (whole blood or S-Cal Calibrator). After performing this procedure you must perform the remaining steps of the appropriate calibration procedure.

1. On the Calibration window, inspect the calibration results table for trending; the parameter results must not show a trend. If the results show trending, there could be an instrument problem; call your Coulter Representative. Do not continue. If the calibrator is expired, the expiration date is displayed in black text with a red background and the calibration run is discarded.
2. With the following in mind, use the calibration statistics to determine if you should transmit calibration factors to the Analyzer.

IMPORTANT Misleading results could occur if you transmit calibration factors that are outside the established limits. If results are outside the limits, call your Coulter Representative.

- The Workstation checks the results for precision (%CV within the established limits). The Workstation flags results outside the limits with a red background. If you choose to transmit calibration factors that are outside the limits, a message appears. You must confirm that you want to transmit the calibration factors. Once you confirm the transmission, the Workstation transmits the calibration factors and posts a message to the Calibration history log.

IMPORTANT Misleading results could occur if you calibrate MCV if RBC FAC % Diff is out of range because MCV depends on RBC. Do not calibrate MCV if RBC FAC % Diff is out of range.

- The Workstation checks the results to ensure the FAC % Diff numbers are less than or equal to established limits. The Workstation flags results outside the limits with a red background. If you choose to transmit calibration factors that are outside the limits, a message appears. You must confirm that you want to transmit the calibration factors. Once you confirm the transmission, the Workstation transmits the calibration factors and posts a message to the Calibration history log.
- The Workstation checks the FAC % Diff and DELTA Diff. The Workstation automatically selects (marks with) the parameters that need adjustment

and flags results that meet the calibration criteria with a yellow background. If you do not want to adjust a marked parameter, unmark it. If all parameters are within limits, a message appears. The message indicates that all calibration factors are set correctly.

3. Select to print a copy of the calibration results for your logbook.
4. Ensure the calibration factors you want to transmit to the Analyzer are selected ( ).

Table 1.1 Calibration Criteria

Parameter	Precision (CV%)	Acceptable FAC % Diff	Calibrate if FAC % Diff is:	Calibrate if Delta Diff is:
WBC	CV ≤2.5%	≤5.0%	>1.25% BUT ≤5.0%	>0.1 BUT ≤0.4
RBC	CV ≤0.8%	≤2.0%	>0.7% BUT ≤2.0%	>0.03 BUT ≤0.09
Hgb	CV ≤0.8%	≤3.0%	>0.78% BUT ≤3.0%	>0.1 BUT ≤0.4
MCV	CV ≤0.8%	≤2.5%	>1.18% BUT ≤2.5%	>1.0 BUT ≤2.0
Plt	CV ≤3.2%	≤9.0%	>2.70% BUT ≤9.0%	>6.0 BUT ≤20.0
MPV	CV ≤5.0%	≤20.0%	>5.0% BUT ≤20.0%	>0.5 BUT ≤2.0

I Adjust parameters as needed.

1. Ensure the Analyzer is ready to receive the new calibration factors.
2. On the Workstation Calibration window, select to transmit the calibration factors, for the selected parameters, to the Analyzer.
3. Select to print the new calibration factors for your logbook.

J Verify calibration by cycling each level of COULTER 5C cell control in Automatic aspiration mode.

1.7 CALIBRATING CBC PARAMETERS WITH WHOLE BLOOD

Sample Requirements

For whole-blood calibration, use a donor who:

- is not receiving medication
- has normal hematologic parameters
- has normal erythrocyte, leukocyte, and thrombocyte morphology.

You must draw into and store specimens in the proper amount of EDTA anticoagulant. If you use vacuum collection tubes, fill them to proper capacity.

Procedure

1. Ensure the apertures are clean and the instrument is functioning properly.
2. Perform a 10-sample reproducibility study on the CBC parameters using the Automatic aspiration mode.
3. Perform a carryover study.
4. Obtain 20 normal, fresh whole-blood specimens. You need enough of each to cycle three samples on the GEN•S System and three samples on a reference instrument.
5. Using the same whole-blood specimens you used in step 4, obtain reference values from other instruments. The following methods are suggested:

WBC and RBC	COULTER ZBI analyzer used with ISOTON® II diluent and ZAP-OGLOBIN® II lytic reagent; use large volume dilutions made with calibrated glassware.
Hgb	Hemoglobincyanide spectrophotometric procedure that follows NCCLS Standard H15-A[7]. This method employs modified Drabkins (Ziljstra) Reagent and is referenced to NIST-certified filters and ICSH standards.
MCV	Packed cell volume measured by a hematocrit procedure that follows NCCLS Standard H7-A[8]. The PCV is not corrected for trapped plasma. MCV is calculated: PCV/RBC x 10.
Plt	Phase-contrast microscopy.
MPV	Reference against latex particles.

6. Using the reference values, set up the CBC calibration information at the Workstation.
7. Cycle each of the 20 samples three consecutive times in CBC Automatic aspiration mode.
8. Review results on the Workstation Calibration window.
9. Adjust parameters as needed.
10. Verify calibration by cycling each level of COULTER 5C cell control in Automatic aspiration mode.

1.8 CHANGING CALIBRATION FACTORS FOR AUTOMATIC ASPIRATION MODE

1. Go to the Analyzer screen.
2. Press MAIN MENU.
3. Press ANALYZER FUNCTIONS.
4. Press CALIBRATION.
5. Press AUTOMATIC CALIBRATION FACTORS. The existing calibration factors appear on the Analyzer screen.
6. Press the button corresponding to the parameter you want to change. Example: Press the button next to WBC.
7. Press the same button until the factor you want to change appears highlighted. Example: Press the WBC button until the AP3 factor appears highlighted.

8. Go to the Diluter Keypad.
9. Use the keypad to provide the desired calibration factor.

   Example: Press 0 . 9 6 6.

10. Press ENTER.
11. Repeat steps 6 through 10 for each value you want to change.
12. Press one of the following:

SYSTEM RUN	To cycle samples. The next sample you cycle automatically updates the calibration factors on the Workstation.
RETURN	To display the CALIBRATION MENU screen.

1.9 CHANGING CALIBRATION FACTORS FOR MANUAL ASPIRATION MODE

1. Go to the Analyzer screen.
2. Press MAIN MENU.
3. Press ANALYZER FUNCTIONS.
4. Press CALIBRATION.
5. Press MANUAL CALIBRATION FACTORS. The existing calibration factors appear on the Analyzer screen.
6. Press the button corresponding to the parameter you want to change. Example: Press the button next to WBC.
7. Go to the Diluter Keypad.
8. Use the keypad to provide the desired calibration factor.

   Example: Press 0 . 9 6 6.

9. Press ENTER.
10. Repeat steps 6 through 9 for each value you want to change.
11. Press one of the following:

SYSTEM RUN	To cycle samples. The next sample you cycle automatically updates the calibration factors on the Workstation.
RETURN	To display the CALIBRATION MENU screen.

1.10 RECEIVING AVERAGE CALIBRATION FACTORS FROM WORKSTATION

1. Go to the Analyzer screen.
2. Press MAIN MENU.
3. Press ANALYZER FUNCTIONS.
4. Press CALIBRATION.

5. Press RECEIVE AVERAGE CALIBRATION FACTORS. Status messages appear on the Analyzer while it receives the data.
6. Press one of the following:

MAIN MENU	To display the Analyzer MAIN MENU screen.
SYSTEM RUN	To cycle samples.
RETURN	To display the CALIBRATION MENU screen.

1.11 SETTING UP NEW CALIBRATION INFORMATION

Note: Before performing this procedure, you must set up Workstation calibration information.

1. Select to display the Instrument Calibration Setup window.
2. Determine if you want to set up calibration:

   Using an S-CAL® Calibrator Diskette:

   a. Insert the calibrator diskette in the diskette drive.

   b. Select

to load the reference values, lot number and expiration date.

   c. Select on the Diskette Entry of S-CAL Calibrator Values window.

   Without using an S-CAL Calibrator Diskette:

   a. Specify the lot number for calibration (if appropriate).

   b. Specify the expiration date for calibration (if appropriate).

   c. Specify the reference values for calibration.

   d. Select to save the values.

3. Select to save the calibration information in the database.

1.12 REVIEWING ANALYZER'S CURRENT CALIBRATION FACTORS FOR AUTOMATIC ASPIRATION MODE

1. Go to the Analyzer screen.
2. Press MAIN MENU.
3. Press ANALYZER FUNCTIONS.
4. Press CALIBRATION.
5. Press AUTOMATIC CALIBRATION FACTORS. The existing calibration factors appear.

6. Press one of the following:

SYSTEM RUN	To cycle samples.
RETURN	To display the CALIBRATION MENU screen.

1.13 REVIEWING ANALYZER'S CURRENT CALIBRATION FACTORS FOR MANUAL ASPIRATION MODE

1. Go to the Analyzer screen.
2. Press MAIN MENU.
3. Press ANALYZER FUNCTIONS.
4. Press CALIBRATION.
5. Press MANUAL CALIBRATION FACTORS. The existing calibration factors appear.
6. Press one of the following:

SYSTEM RUN	To cycle samples.
RETURN	To display the CALIBRATION MENU screen.

2.1 OVERVIEW

Clean the apertures as needed. Use the following information to determine the best method for cleaning based on your system's status.

When to Zap and Bleach Apertures

- If you fail to recover control values.
- If you observe:
  - Decreased cell counts
  - Increased MCV values
  - Increased voteouts.

Systems using COULTER CLENZ® cleaning agent for at least 30 minutes/day do not need to bleach the apertures routinely. Before bleaching, check that the apertures are not clogged. If you do not use COULTER CLENZ cleaning agent, bleach the apertures before calibration.

When to Unclog Apertures

- If you fail to recover control values.
- If you observe:
  - Frequent aperture errors
  - Decreased cell counts
  - Increased MCV values
  - Increased voteouts
  - Erratic MCV, RBC, WBC or Plt counts.

When to Bleach RBC Internal Electrodes

If you observe a red/brown buildup on the RBC internal electrodes.

When to Clean an Aperture Bath

If you observe:

- Salt deposits on or around an O-ring
- Bubbles in the sweep-flow lines above, but not below, the aperture blocks. First check that the bubbles are not caused by a loose fitting, which can be tightened.

When you clean aperture baths, replace the O-rings if you have spares available.

When to Clean the Waste Chamber or Vacuum Isolator Chamber

If you see protein buildup in a chamber, you should bleach it.

When to Drain the Overflow Chamber

If the overflow chamber has liquid in it because the baths overflowed.

When to Clean Air Filters

CAUTION Risk of damage to the Power Supply. A dirty air filter can cause the Power Supply to overheat. Check the filters and clean as needed.

Clean the air filters as needed. Initially, check air filters monthly.

When to Clean the Light Pen and Touch Screen

Clean the light pen and touch screen as needed.

When to Clean the BSV and the BSV Drip Plate

If you see blood or reagent buildup on the drip plate, clean the drip plate. Only remove and clean the BSV at the advice of a Coulter Representative.

Note: It is normal for crystallized reagent to be present on the external surfaces. The presence of crystallized reagent does not indicate the need for removal and cleaning of the BSV. The crystallized reagent can be removed by cleaning the outside sections of the BSV.

2.2 CLEANING AIR FILTERS

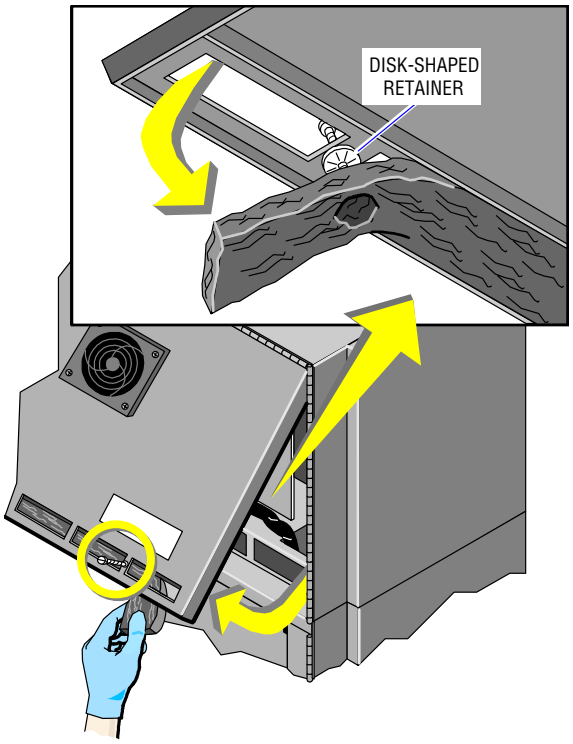
CAUTION Risk of damage to the Power Supply. A dirty air filter can cause the Power Supply to overheat. Check the filters and clean as needed.

1. Go to the Diluter Keypad.
2. Press POWER OFF.
3. Turn off the main breaker on the Power Supply.

WARNING Risk of personal injury. A shock hazard exists if the power cord is connected. Unplug the primary power cord before performing these procedures.

4. Disconnect the primary power cord.
5. Locate and remove the air filters:

Analyzer Air Filter

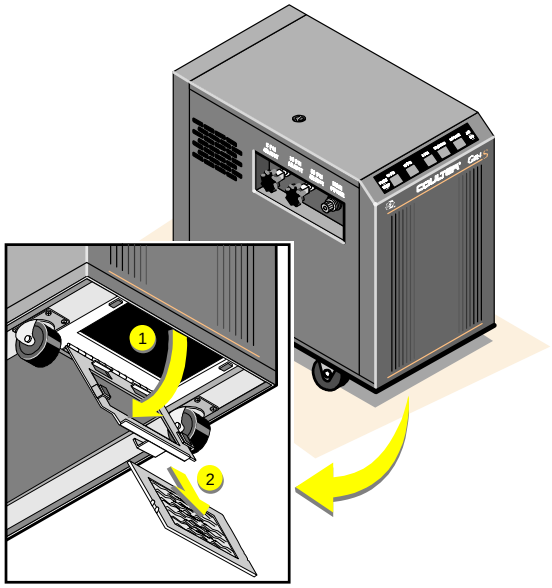


a. Loosen the screws on the back of the Analyzer.

b. Open the back of the Analyzer.

c. Pull the air filter down over the disk-shaped retainer on the screws to remove the air filter.

Power Supply Air Filter



a. Push downward on the edge of filter cover.

b. Slide the filter out.

6. Wash the filters in soap and water, rinse them and dry them completely. If you find a filter that is torn or shredded, discard it and replace it with a new one. Order replacement filters from your Coulter Representative.

7. Return the clean air filters to their original location.
8. Reconnect the primary power cord.
9. Turn on the Power Supply main breaker.
10. Go to the Diluter Keypad.
11. Press POWER ON.

2.3 BLEACHING APERTURES

Summary

CAUTION Risk of system damage. If you mix ISOTON® III diluent with bleach, a precipitate forms that can clog the apertures. Do not mix diluent with bleach.

A. Prepare 40 mL of bleach solution in a wash bottle.

B. Put the bleach solution in the WBC bath.

C. Use F05 and activate solenoid 12 to bleach the Hgb cuvette.

D. Refill the WBC bath with bleach.

E. Put the bleach solution in the RBC bath.

F. Perform F11, Extended Prime. If necessary, add more bleach solution to the WBC bath to keep the liquid above the apertures.

G. Disconnect the wash bottle from WBC bath.

H. Leave the bleach solution in the baths 00:15:00 HR MIN SEC.

I. Go to the Diluter Keypad.

J. Press DRAIN.

K. Perform F12, Extended Clear.

L. Press DRAIN.

M. Fill the baths with cleaning agent and drain.

N. Press SHUT DOWN.

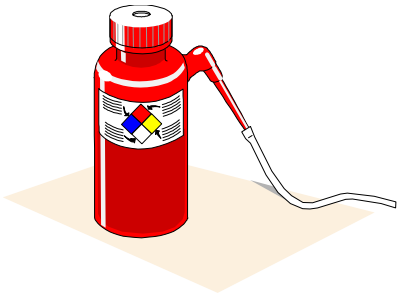
O. Press START UP.

P. Prime the system by cycling whole blood in the aspiration mode you plan to use.

Procedure

CAUTION Risk of system damage. If you mix ISOTON® III diluent with bleach, a precipitate forms that can clog the apertures. Do not mix diluent with bleach.

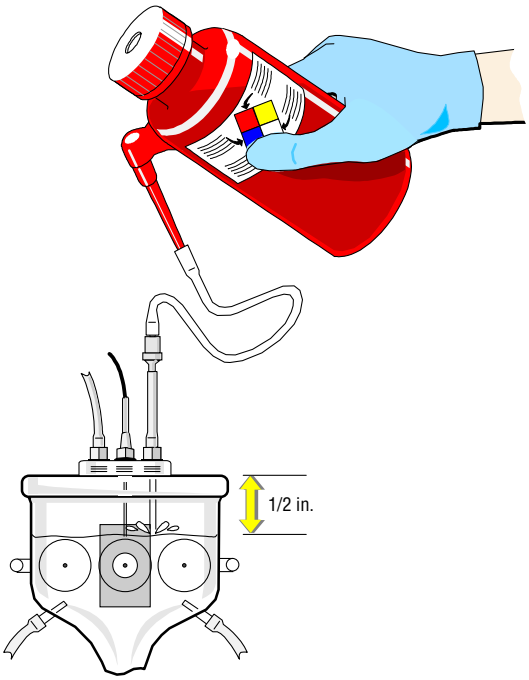
A Prepare Bleach Solution.



1. Put one part bleach and one part distilled water into a wash bottle. Use a high–quality, fragrance–free bleach (5% sodium hypochlorite).
2. Mix the solution.
3. Connect a 20–cm (7–in.) piece of tubing to the spout of the wash bottle containing the bleach solution.

B Put Bleach Solution in WBC Bath.

1. Open the Diluter door.
2. Ensure pneumatics are on.
3. Go to the Diluter Keypad.
4. Press DRAIN until the aperture baths drain completely into the waste chamber.



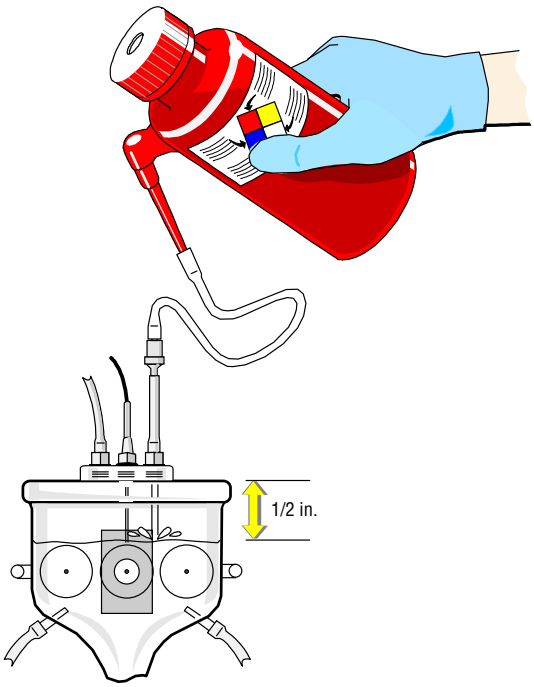
5. Find the bleach fitting check valve on the top right of the WBC bath.
6. Connect the loose end of the tubing on the wash bottle to the bleach check valve on the WBC bath.
7. Put bleach solution into WBC bath so solution is within 1/2 in. from the top of the bath.

C Use F05 and activate solenoid 12 to bleach the Hgb cuvette.

See Heading 5.2, DILUTER FUNCTIONS, Activating and Keeping Solenoid Active (F90).

D Refill the WBC bath with bleach.

E Put Bleach Solution in RBC Bath.



1. Disconnect the bleach tubing from the check valve on the top of WBC bath and connect it to the bleach check valve on the top right of the RBC bath.
2. Put bleach solution into the RBC bath so the solution is within 1/2 in. from the top of the bath.
3. Disconnect the bleach tubing from the RBC bath and reconnect it to the WBC bath.

F Perform F11, Extended Prime. If necessary, add more bleach solution to the WBC bath to keep liquid above the apertures.

IMPORTANT Risk of misleading results. Make sure the baths are full before performing this procedure. If the baths are not full, you may need to prime again because bubbles could be in the line.

1. Go to the Diluter Keypad.
2. Press F 1 1 ENTER to pull fluid through the apertures to the vacuum isolator chamber for 60 seconds. The Diluter Keypad displays EXTENDED PRIME while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 11. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

G Disconnect the wash bottle from WBC bath.

H Leave bleach solution in the baths 00:15:00 HR MIN SEC **.**

I Go to the Diluter Keypad.

J Press DRAIN **.**

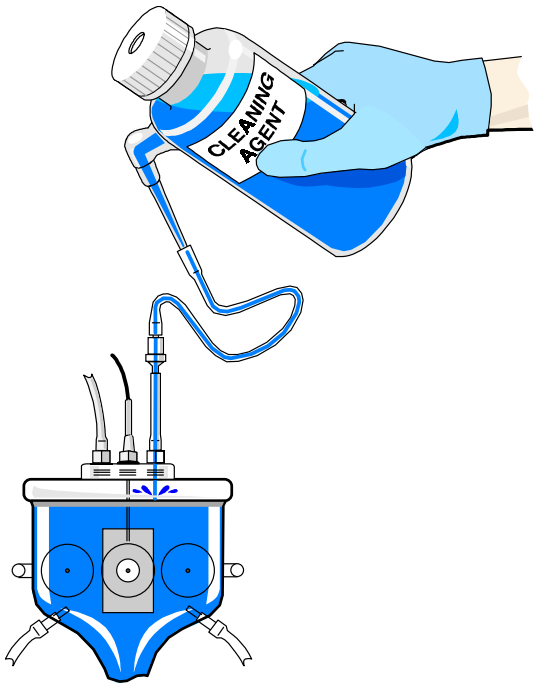
K Perform F12, Extended Clear.

1. Go to the Diluter Keypad.
2. Press F 1 2 ENTER to apply 5-psi pressure to the rear of the apertures for 60 seconds. The Diluter Keypad displays EXTENDED CLEAR while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 12. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

L Press DRAIN.

M Fill Baths with Cleaning Agent and Drain.

CAUTION Risk of system damage. Possible damage can occur to the instrument if the waste chamber overflows. Do not let the waste chamber get too full. Use F05 to activate solenoid 15 to drain the waste chamber as needed.



1. Fill a wash bottle with cleaning agent.
2. Connect a 20–cm (7–in.) piece of tubing to the spout of wash bottle.
3. Fill each bath to the top with cleaning agent to remove residual bleach.
4. Go to the Diluter Keypad.
5. Press DRAIN.
6. Refill the baths with cleaning agent.
7. Press DRAIN.
8. Disconnect the wash bottle.
9. Press RINSE.
10. Ensure the baths fill with diluent and the waste chamber empties.
11. Close the aperture compartment.

N Press SHUT DOWN.

O Press START UP.

P Prime the system by cycling whole blood in the aspiration mode you plan to use.

2.4 CLEANING AN APERTURE BATH

Summary

WARNING Possible biohazardous condition. The aperture bath and its associated tubing can contain residual biological materials and must be handled with care. Avoid skin contact. Clean up spills immediately in accordance with your local regulations and acceptable laboratory procedures. This may include, but is not limited to, wearing protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this analyzer.

A. Press DRAIN until the aperture baths drain completely into the waste chamber.

B. Press POWER OFF.

C. Unhook the bath springs and gently pull the bath out of instrument.

D. Use distilled water to clean bath and O–rings.

E. Moisten the O–rings and return the bath to its original location.

F. Check for leaks and bubbles.

G. Close the compartment door beneath the baths and aperture compartment.

H. Prime the system by cycling whole blood in the aspiration mode you plan to use.

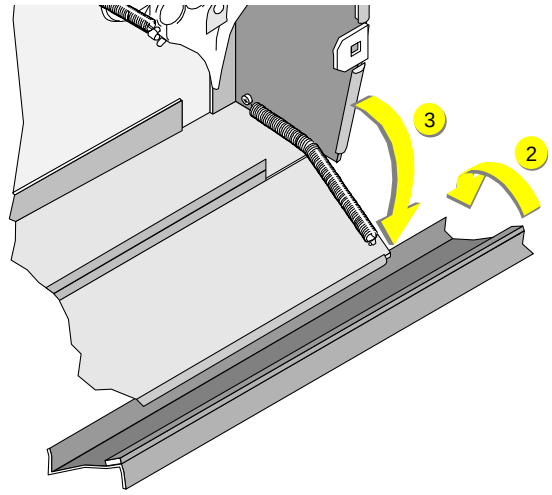
Procedure

A Press DRAIN until the aperture baths drain completely into the waste chamber.

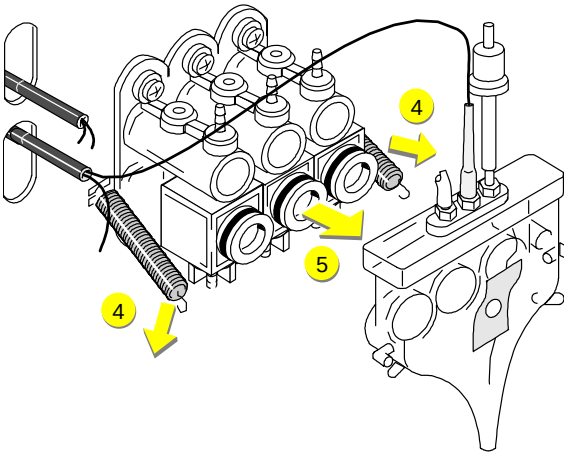
B Press POWER OFF.

C Unhook the bath springs and gently pull the bath out of instrument.

IMPORTANT Risk of incorrect control results. If you move the external electrode attached to the bath you can create a carryover problem. Do not move the external electrode.



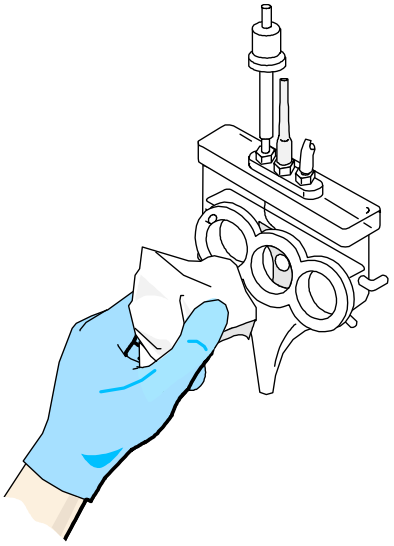
1. Open the Diluter.
2. Manually move the rocker bed to its backward position.
3. Pull open the compartment door beneath the baths. Keep the door open by anchoring the spring to the bottom edge.



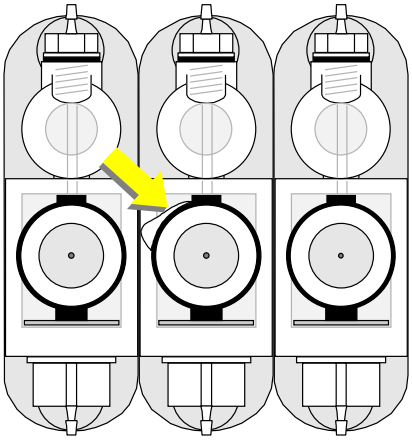
4. Use a hemostat to unhook the spring attached to each side of the bath.
5. Using both hands, gently rock the bath off the large O–rings.

D Use distilled water to clean the bath and O-rings.

CAUTION Risk of instrument damage. If you touch the center of the block you can damage the instrument. Do not touch the aperture in the center of the block.

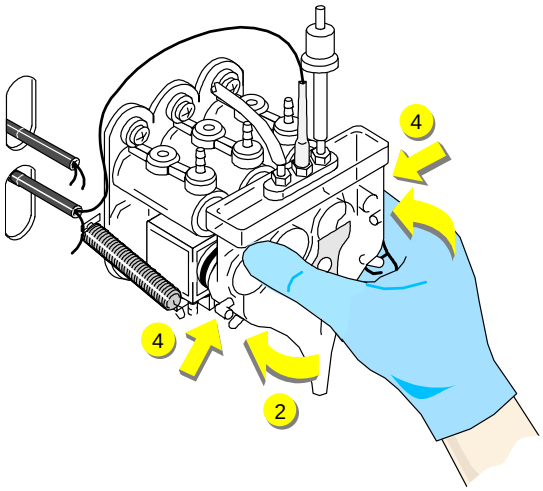


1. Moisten a lint–free tissue with distilled water.
2. Use the moist lint–free tissue to clean the openings in the bath so they are free of salt deposits.



3. Look at each large O–ring to ensure it is free of salt deposits.
4. If necessary, use the moist lint–free tissue to clean the area on and around the three large O–rings.
5. Replace the O–rings if necessary.

E Moisten the O-rings and return the bath to its original location.



1. Moisten the three large O–rings with distilled water.
2. Gently rock the bath onto the large O–rings until it snaps back to its original position.
3. Ensure you properly aligned the bath with all three blocks to prevent leaking.
4. While holding the bath in place, use a hemostat to hook springs to each side of the bath.

F Check for leaks and bubbles.

1. Go to the Diluter Keypad.
2. Press POWER ON.
3. Ensure the bath fills with diluent and the waste chamber empties.
4. Ensure the bath is not leaking.
5. Press DRAIN.
6. Ensure the bath drains.
7. Press RINSE.
8. Repeat steps 5 through 7 as needed to ensure the bath is not leaking.
9. Use F05 to activate solenoid 10 for WBC bath or 11 for RBC bath.
10. Verify that all three lines from the bath to the vacuum isolator chamber pull a bubble–free stream.

G Close the compartment door beneath the baths and aperture compartment.

H Prime the system by cycling whole blood in the aspiration mode you plan to use

2.5 CLEARING CLOGGED APERTURES

1. Go to the Diluter Keypad.
2. Press CLEAR APERT.
3. If the aperture remains clogged, clean the apertures using F01.

a. Press F 0 1 ENTER to apply current across the apertures. The current removes protein or debris from the apertures. The Diluter Keypad displays CLEAN APERTURES while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 01. Press ENTER to perform this function again.

b. Press STOP to exit this function. The Diluter Keypad displays READY.

4. If the aperture remains clogged, zap the apertures using F09.

   a. Press F 0 9 ENTER to:

      - Apply pressure behind the baths
      - Drain and rinse the baths four times with cleaning agent
      - Draw cleaning agent behind the apertures
      - Zap the apertures 10 times to remove protein or debris from the apertures.

      The Diluter Keypad displays ZAP APERTURES while the instrument performs this function. When the function completes processing, the Diluter Keypad displays PRESS 0 / 1 FOR RINSE / REPEAT ZAP.

   b. Press:

      - 0 To rinse with cleaning agent. The Diluter Keypad displays RINSE CLENZ.
      - 1 To repeat the zap aperture function. The Diluter Keypad displays REPEAT ZAPPING.

   c. Press STOP to exit this function. The Diluter Keypad displays READY.

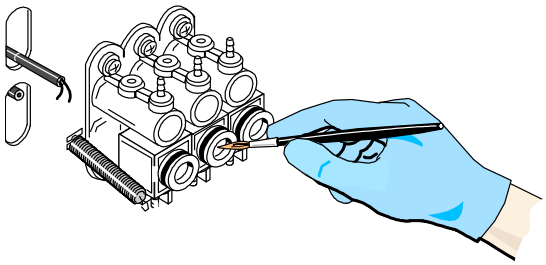
5. If the aperture remains clogged, bleach the apertures. While bleach is in the baths, use F01 up to five times.

6. If the aperture remains clogged, clean the aperture with a camel–hair brush.

   a. Press DRAIN until the aperture baths drain completely into the waste chamber.

   b. Press POWER OFF.

   c. Unhook the bath springs and gently pull the bath out of the instrument.



d. Using the tip of the camel–hair brush supplied with your instrument, gently brush the clogged aperture.

e. Moisten the O–rings with distilled water and return the bath to its original location.

f. Check for leaks and bubbles.

g. Close the aperture compartment.

h. Prime the system by cycling whole blood in the aspiration mode you plan to use.

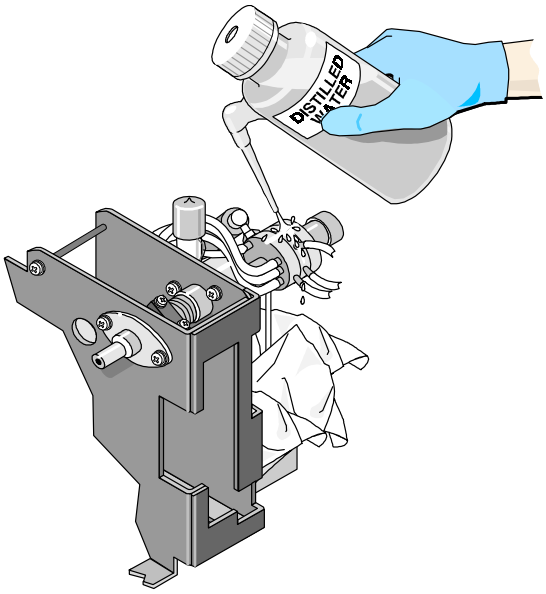
7. If the aperture remains clogged, call your Coulter Representative.

2.6 ZAPPING APERTURES

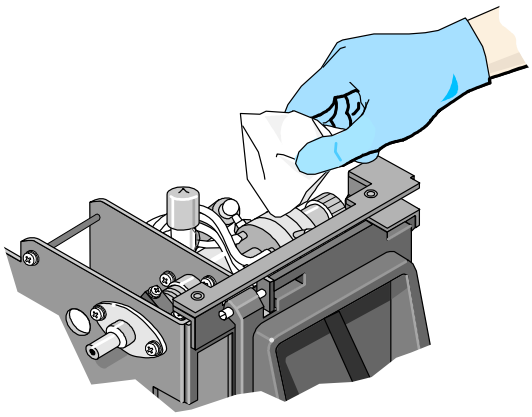
1. Ensure pneumatics are on.
2. Use F09 to zap the apertures.
3. Press START UP to purge the system of cleaning agent.
4. Prime the system by cycling whole blood in Automatic aspiration mode.
5. Run a control in CBC test mode.
6. Verify your control results are acceptable. If they are unacceptable, bleach the apertures.

2.7 CLEANING OUTSIDE SECTIONS OF BLOOD SAMPLING VALVE

WARNING Possible biohazardous condition. The BSV and its associated tubing can contain residual biological materials and must be handled with care. Avoid skin contact. Clean up spills immediately in accordance with your local regulations and acceptable laboratory procedures. This may include, but is not limited to, wearing protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this analyzer.



1. Open the Diluter lower front door.
2. Open the black activator.
3. While holding the activator open, insert several lint–free tissues beneath and around the BSV to catch overflow.
4. Close the black activator.
5. Rinse the outside surfaces with distilled water.



6. Dry the outside surfaces with a lint–free tissue.
7. Open the black activator and remove the lint–free tissues.
8. Close the black activator.
9. Close the Diluter lower front door.
10. Resume normal operation.

2.8 REMOVING AND CLEANING BLOOD SAMPLING VALVE

Summary

CAUTION Risk of system damage. The BSV can be scratched or misaligned during this procedure. Be careful not to scratch or rub the BSV surfaces. This is **not** a routine procedure and should only be done if instructed to do so by your Coulter Representative.

WARNING Possible biohazardous condition. The BSV and its associated tubing can contain residual biological materials and must be handled with care. Avoid skin contact. Clean up spills immediately in accordance with your local regulations and acceptable laboratory procedures. This may include, but is not limited to, wearing protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this analyzer.

A. Prepare the instrument so you can remove the BSV.

B. Remove the BSV.

C. Clean the BSV.

D. Return the BSV to its original location.

E. Clean up the area around the BSV.

F. Verify that the BSV is functioning properly.

Procedure

CAUTION Risk of system damage. The BSV can be scratched or misaligned during this procedure. Be careful not to scratch or rub the BSV surfaces. This is **not** a routine procedure and should only be done if instructed to do so by your Coulter Representative.

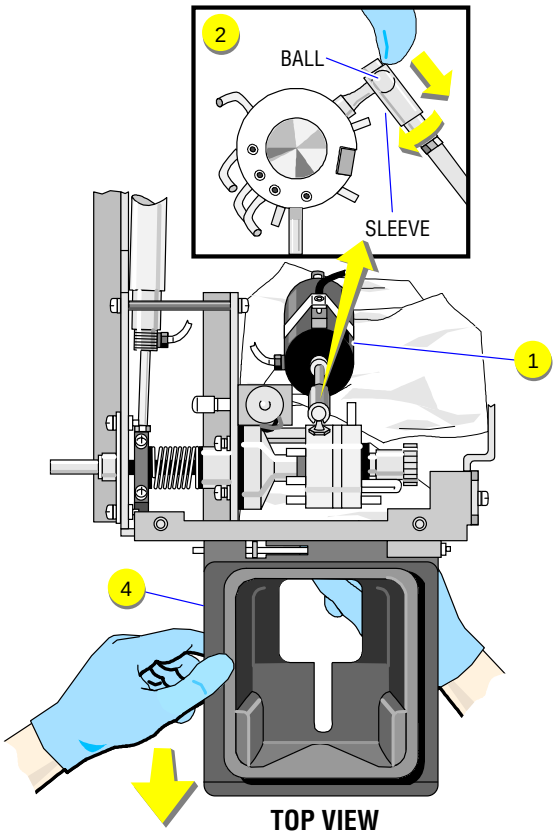
WARNING Possible biohazardous condition. The BSV and its associated tubing can contain residual biological materials and must be handled with care. Avoid skin contact. Clean up spills immediately in accordance with your local regulations and acceptable laboratory procedures. This may include, but is not limited to, wearing protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this analyzer.

A Prepare the instrument so you can remove the BSV.

1. Ensure pneumatics are on.
2. Go to the Diluter Keypad.
3. Press DRAIN.
4. Wait 00:00:15 (HR MIN SEC).
5. Use F06 to release BSV.

   Note: To allow you to work more easily with the BSV, do not exit this function until instructed to do so.
6. Open the Diluter lower front door.

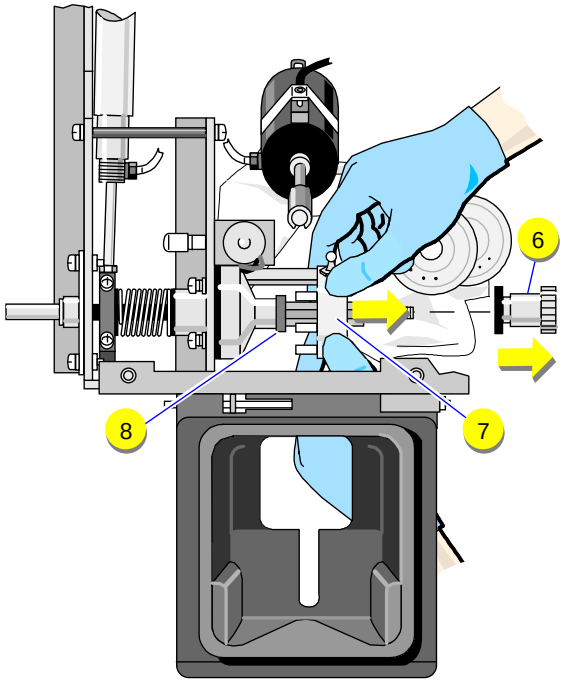
B Remove the BSV.



1. Find the air cylinder.
2. Push back the sleeve on the air cylinder and rotate it so that it does not slide back over the ball joint. Lift it off the ball joint to disconnect the air cylinder from the inner section.
3. Manually move the air cylinder block as needed to position the BSV.
4. Open the black activator.
5. While holding the activator open, cover the area below and around the BSV with several layers of lint–free tissue to catch overflow that occurs during the cleaning process.

CAUTION Risk of damage to fittings can occur if you try to remove the associated tubing from the BSV. Handle all sections carefully. Do not pull on the sample loop or any other metal fittings attached to the BSV.

CAUTION Risk of damage to ceramic sections can occur if they come in contact with the metal shaft. Handle all sections carefully. Do not touch the inside surfaces against the metal shaft.



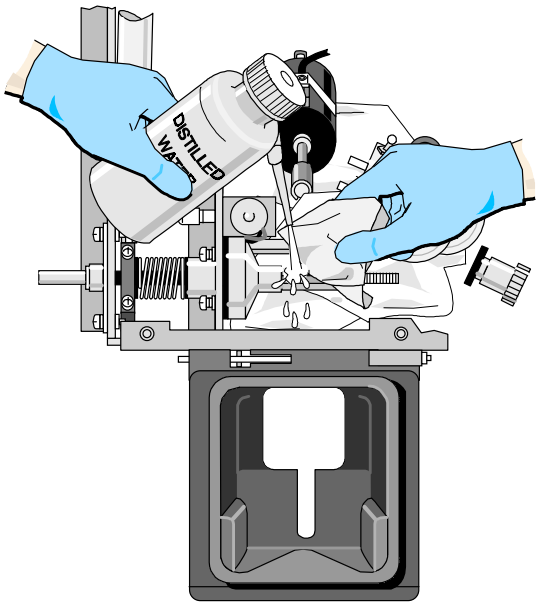
TOP VIEW

6. Unscrew and remove the knob that holds the BSV in place. Do not try to remove the BSV tubing, you may damage the fittings. Do not pull on the sample loop or any other metal fittings attached to the instrument.
7. Remove the 3 ceramic sections from the mounting post with a sliding, not a pulling motion.
8. Pull the plastic washer off the mounting post.

   Note: The plastic washer may be stuck to the ceramic section. If so, remove it from the ceramic section for cleaning.
9. Place the sections and the plastic washer on the lint–free tissues around the BSV assembly.
10. Close the black activator.

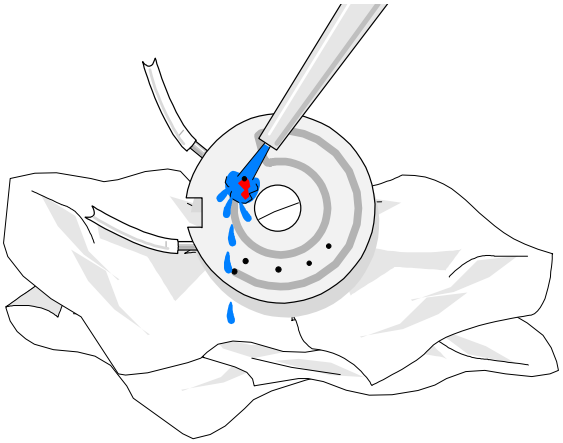
C Clean the BSV.

CAUTION Risk of damage to ceramic sections can occur if they come in contact with an abrasive material. Do not scratch or use abrasive materials on the inside surfaces. Never try to remove debris by inserting an object in the valve's passageways.



TOP VIEW

1. Clean the guide post and mounting post with distilled water and dry them with a lint–free tissue.
2. Hold a container or several lint–free tissues beneath the BSV mounting post to catch overflow.

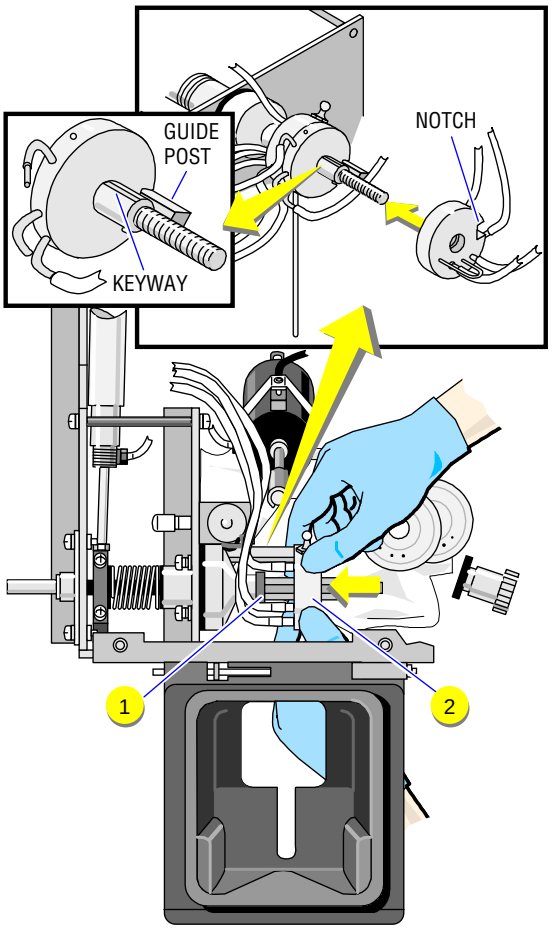


3. Clean the passageways, inside surfaces, and center holes of the three sections with a stream of cleaning agent from a wash bottle.
4. Place the spout of the wash bottle over each opening. Force cleaning agent into each passageway to free and remove any debris or blood.
5. If a stubborn plug remains lodged in passageway, try a jet of filtered compressed air to dislodge it.
6. Use a lint–free tissue moistened with distilled water to remove any debris or dried blood that still remains on the surface or in center holes.
7. Rinse the passageways and inside surfaces thoroughly with distilled water.

D Return the BSV to its original location.

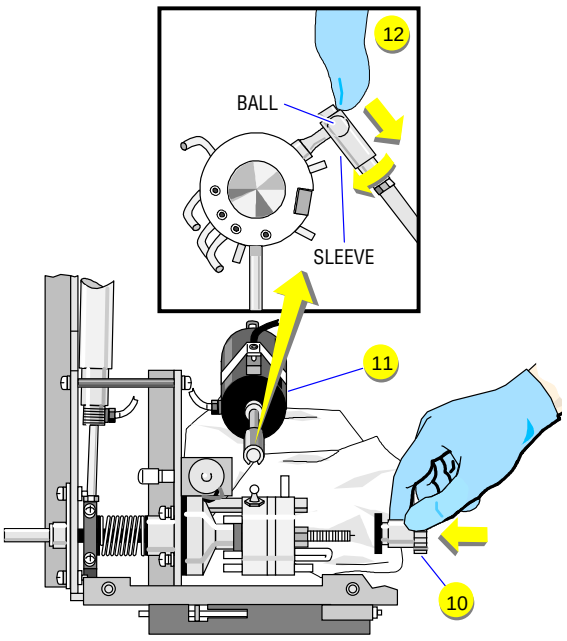
IMPORTANT Incorrect results can be reported if oil or powder gets on the BSV. Before returning each section to the mounting post, moisten the inside surfaces with distilled water. Never use your fingers to spread water over the surfaces because there could be oil or powder on your gloves.

CAUTION Risk of system damage. The tubing can be damaged if positioned in front of the aspirator tip. Before mounting the front section, make sure all tubing attached to the front section is positioned behind the aspirator tip.



TOP VIEW

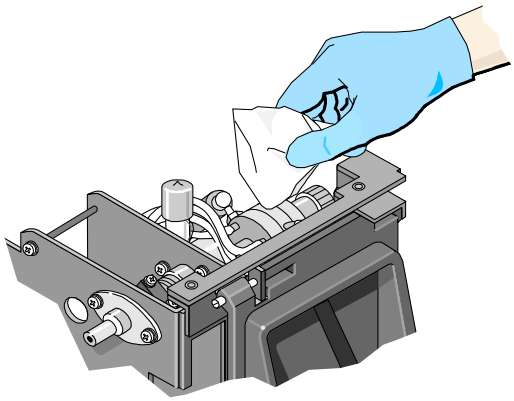
1. Replace the plastic washer on the mounting post.
2. Return the inner section to its original position; align the notch with the guide post and push the section into place.
3. Make sure to position all tubing attached to the inner section behind the probe.
4. Ensure the routing of tubing is smooth to prevent kinks.
5. Align the key of the center section with the keyway on the mounting post and push it into place.
6. Manually move the air cylinder block as needed to position the key and keyway.
7. Ensure the routing of tubing is smooth to prevent kinks.
8. Align the notch in the front section with the guide post and push the section into place.
9. Ensure the routing of tubing is smooth to prevent kinks.



TOP VIEW

10. Screw the knob onto the mounting post until you see compression of the spring, then continue until finger tight.
11. Go to the air cylinder.
12. While holding the air cylinder shaft securely, push back the sleeve and reattach the shaft to the ball joint on the front section of the BSV, then turn the sleeve to secure the ball joint.

E Clean up the area around the BSV.



1. Dry the outside of the BSV with a lint–free tissue.
2. Open the black activator and remove the lint–free tissues.
3. Close the black activator.
4. If necessary, dry the area beneath and around the BSV assembly.

F Verify BSV functions.

1. Go to the Diluter Keypad.
2. Press STOP twice to exit F06 function.
3. Press RINSE to refill the baths.
4. Ensure the BSV is not leaking and the baths fill with diluent.
5. Cycle a sample of diluent in Manual aspiration mode.
6. Open the Diluter door.

7. Verify that the BSV rotates and does not leak.
8. Close the Diluter door.
9. Disable the blood detector.
10. Cycle a sample of diluent in Automatic aspiration mode.
11. When the instrument completes its cycle, verify that the BSV is not leaking.
12. Go to the Diluter Keypad.
13. Press PRIME APERT.
14. Prime the system by cycling whole blood in Automatic aspiration mode.

2.9 CLEANING THE CASSETTE

Wash the cassettes as needed in warm soapy water and rinse thoroughly. Do not use an abrasive. Keep the cassettes free of dried blood, bleach, or diluent. Be careful not to scratch or deface the bar-code labels. Dirt, smears, pencil lead, and grease can affect bar-code label reading.

2.10 FLUSHING SYSTEM

1. Prepare 750 mL of bleach solution in a container.
2. Place the reagent line labeled DISINFECT into the bleach container.
3. Go to the Diluter Keypad.

Press F 4 0 ENTER to decontaminate Diluter lines that are exposed to blood. The Diluter Keypad displays SYSTEM FLUSH while the instrument performs this function. This takes approximately 5 minutes. When the function completes processing, the Diluter Keypad displays FUNCTION = 40.

CAUTION System damage could occur if you leave the bleach solution for more than 00:15:00 (HR MIN SEC). Remove the bleach solution immediately after the system flush completes processing.

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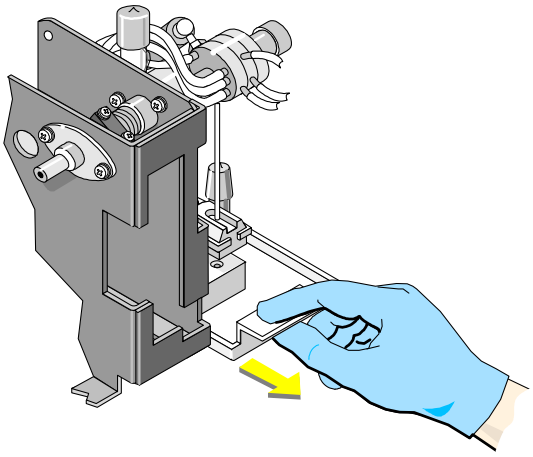
4. Remove the reagent line from the bleach container and place it in a 750 mL container of distilled water.
5. Press ENTER to remove the bleach solution. The Diluter Keypad displays SYSTEM FLUSH while the instrument performs this function. This takes approximately 5 minutes. When the function completes processing, the Diluter Keypad displays FUNCTION = 40.
6. Press STOP twice to exit this function. The Diluter Keypad displays READY.
7. Press SHUT DOWN.
8. Perform daily startup.

2.11 CLEANING BLOOD SAMPLING VALVE DRIP PLATE

WARNING Possible biohazardous condition. The drip plate can contain residual biological materials and must be handled with care. Avoid skin contact. Clean up spills immediately in accordance with your local regulations and acceptable laboratory procedures. This may include, but is not limited to, wearing protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this analyzer.



1. Prepare a bleach solution in a wash bottle.
2. Open the Diluter lower front door.
3. Slide the drip plate out.
4. Use the wash bottle to fill the drip plate with the bleach solution. Be careful not to overflow the drip plate.
5. Leave the bleach solution in the drip plate for

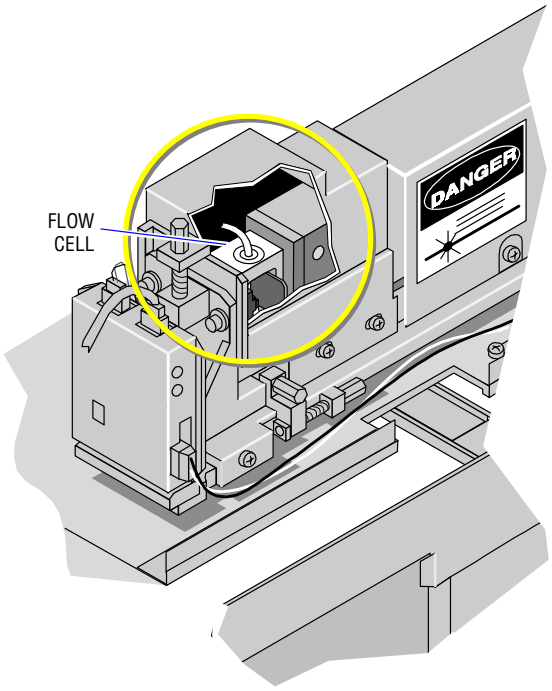
.
6. Use gauze held with a hemostat to clean the entire surface.
7. Use clean, dry gauze to soak up any excess bleach solution.
8. Use a wash bottle with distilled water to rinse the drip plate.
9. Use clean, dry gauze to soak up any excess water.
10. Slide the drip plate back.
11. Close the Diluter lower front door.

2.12 CLEARING CLOGGED FLOW

WARNING Risk of personal injury. If non-Coulter trained personnel attempts to remove the laser, injury could result. Do not try to remove the laser from the Diluter. All service and maintenance of the laser must be done by trained Coulter personnel.

For additional laser safety information, see the GEN•S Reference Guide (PN 4237221), Hazards chapter.

CAUTION Risk of instrument damage. Performing the following step can damage the flow cell because it places greater stress on the flow cell than do the previous functions. Use the following step **only** if the other functions fail to remove the clog and **never** more than once, unless specifically instructed to do so by your Coulter Representative.

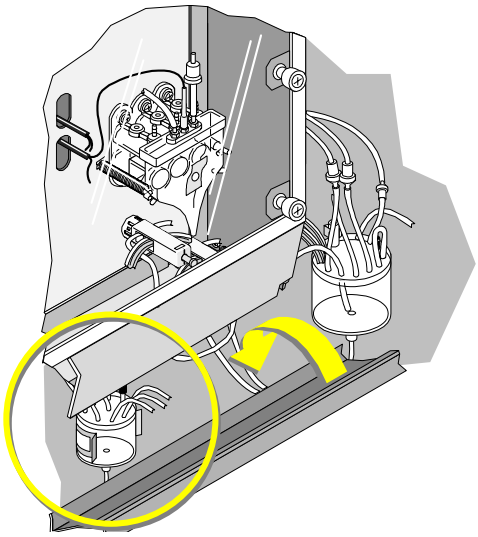


1. Use F44 to clear the flow cell.
2. If you see FLOW CELL CLOGGED on the Analyzer, use F44 again.
3. If you still see FLOW CELL CLOGGED on the Analyzer, use F45 up to three times to clear the flow cell.
4. If you still see FLOW CELL CLOGGED on the Analyzer, use F46 to clear the flow cell.
5. Leave the instrument idle for 00:30:00 (HR MIN SEC).
6. Use F44 again before analyzing samples or running controls.
7. If you still see FLOW CELL CLOGGED on the Analyzer, call your Coulter Representative.

2.13 DRAINING OVERFLOW

WARNING Possible biohazardous condition. The overflow chamber can contain residual biological materials and must be handled with care. Follow your laboratory's protocol for safety measures. This may include, but is not limited to, wearing protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this analyzer.

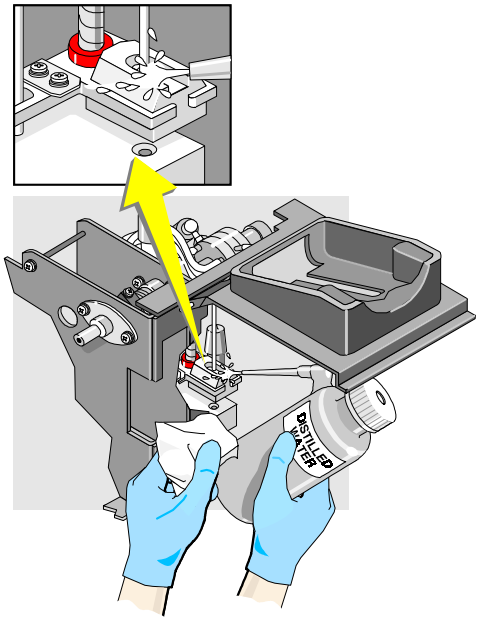
Drain the overflow chamber if it has liquid in it because the baths overflowed.



1. Ensure pneumatics are on.
2. Use F05 to activate solenoid 12 to drain the overflow chamber.

2.14 CLEANING MANUAL ASPIRATION PROBE

WARNING Possible biohazardous condition. The manual aspiration probe wipe can contain residual biological materials and must be handled with care. Avoid skin contact. Clean up spills immediately in accordance with your local regulations and acceptable laboratory procedures. This may include, but is not limited to, wearing protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this analyzer.



1. Open the Diluter lower front door.
2. Open the black activator.
3. Use distilled water to rinse the probe wipe.
4. Use a lint-free tissue to remove any dried blood and dry the probe wipe.
5. Close the black activator.
6. Close the Diluter lower front door.

2.15 BLEACHING RBC INTERNAL ELECTRODES

Summary

CAUTION Risk of system damage. If you mix ISOTON® III diluent with bleach, a precipitate forms that can clog the apertures. Do not mix them.

A. Prepare 50 mL of bleach solution in a wash bottle.

B. Put the bleach solution in the WBC bath.

C. Put the bleach solution in the RBC bath.

D. Perform Extended Prime.

E. Disconnect the sweep flow lines and attach tubing to draw up bleach.

CAUTION Risk of damage to the instrument. Possible damage can occur to the instrument if the waste chamber overflows. Do not let the waste chamber get too full. Use F05 to activate solenoid 15 to drain the waste chamber as needed.

F. Draw bleach into the RBC apertures and drain.

G. Fill the baths with cleaning agent.

H. Draw cleaning agent into the RBC aperture housing and drain.

I. Disconnect the tubing and reconnect the sweep–flow lines.

J. Perform Extended Clear.

K. Press SHUT DOWN.

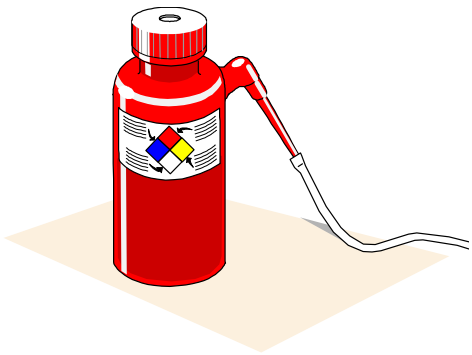
L. Press START UP.

M. Prime the system by cycling whole blood in the aspiration mode you plan to use.

Procedure

CAUTION Risk of system damage. If you mix ISOTON® III diluent with bleach, a precipitate forms that can clog the apertures. Do not mix them.

A Prepare 50mL of bleach solution in a wash bottle.

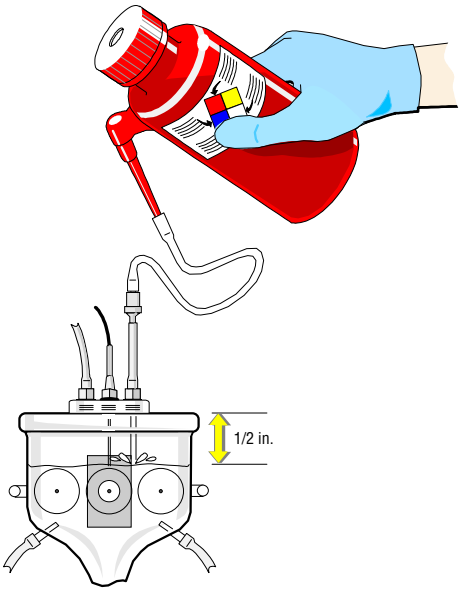


1. Put one part bleach and one part distilled water into a wash bottle. Use a high–quality, fragrance–free bleach (5% sodium hypochlorite).
2. Mix the solution.
3. Connect a 20–cm (7–in.) piece of tubing to the spout of the wash bottle containing the bleach solution.

B Put the bleach solution in the WBC bath.

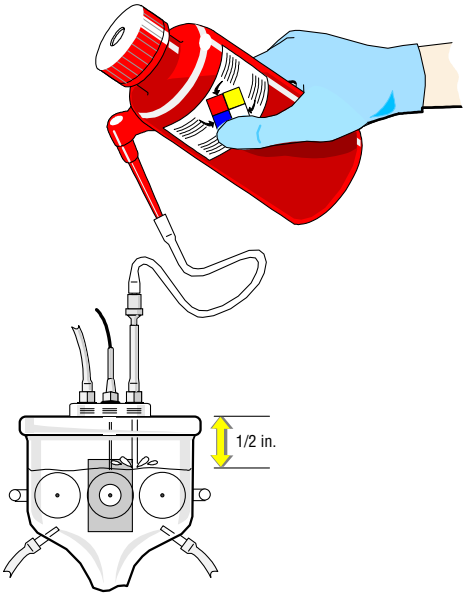
1. Open the Diluter door.
2. Ensure pneumatics are on.
3. Go to the Diluter Keypad.

4. Press DRAIN until the aperture baths drain completely into the waste chamber.



5. Find the bleach fitting check valve on the top right of the WBC bath.
6. Connect the loose end of the tubing on the wash bottle to the bleach check valve on the WBC bath.
7. Put bleach solution into WBC bath so solution is within 1/2 in. from the top of the bath.

C Put the bleach solution in the RBC bath.



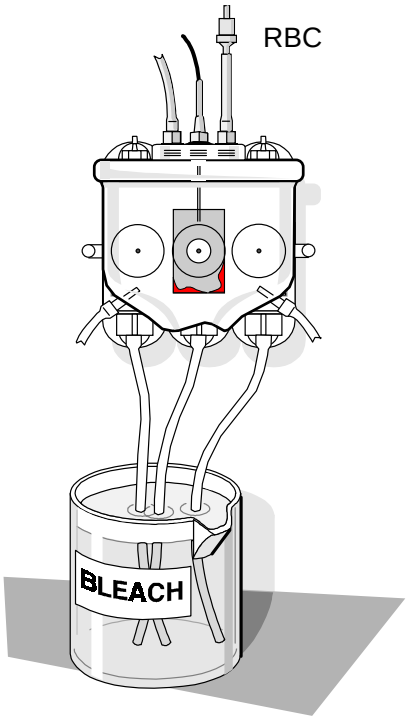
1. Disconnect the bleach tubing from the check valve on the top of WBC bath and connect it to the bleach check valve on the top right of the RBC bath.
2. Put bleach solution into the RBC bath so the solution is within 1/2 in. from the top of the bath.
3. Disconnect the bleach tubing from the RBC bath and reconnect it to the WBC bath.

D Perform extended prime.

IMPORTANT Risk of misleading results. Make sure the baths are full before performing this procedure. If the baths are not full, you may need to prime again because bubbles could be in the line.

1. Go to the Diluter Keypad.
2. Press F 1 1 ENTER to pull fluid through the apertures to the vacuum isolator chamber for 60 seconds. The Diluter Keypad displays EXTENDED PRIME while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 11. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

E Disconnect the sweep-flow lines and attach tubing to draw up bleach.

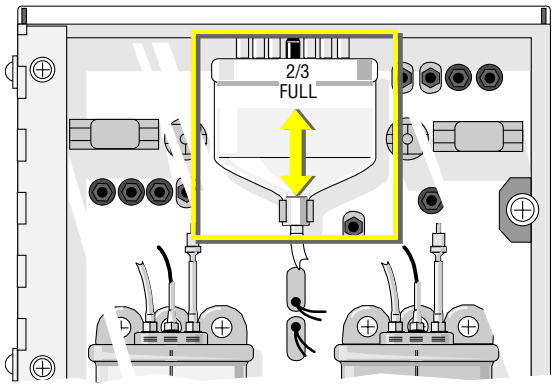


1. Disconnect the three sweep–flow lines at the bottom of the RBC bath. Do not remove the white fittings.
2. Attach a piece of tubing approximately 10 in. long to each fitting.
3. Place the ends of the tubing into a beaker of bleach solution.

F Draw bleach into the RBC apertures and drain.

CAUTION Risk of damage to the instrument. Possible damage can occur to the instrument if the waste chamber overflows. Do not let the waste chamber get too full. Use F05 to activate solenoid 15 to drain the waste chamber as needed

.

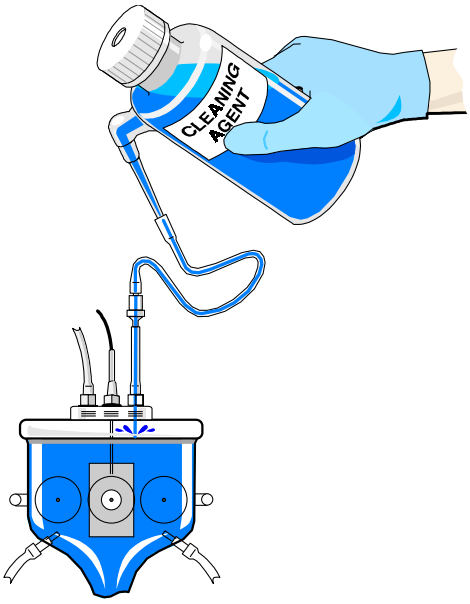


1. Use F05 to activate solenoid 11 for 00:00:15 HR MIN SEC to draw bleach solution into RBC aperture housing.
2. Do not let the liquid level in the vacuum isolator rise above 2/3 full. Use F05 to activate solenoid 16 as needed to drain the vacuum isolator chamber.
3. Leave the bleach solution in bath and aperture housing for 00:15:00 HR MIN SEC.
4. Go to the Diluter Keypad.
5. Press PRIME APERT to drain and rinse baths.
6. Press DRAIN.

G Fill the baths with cleaning agent.

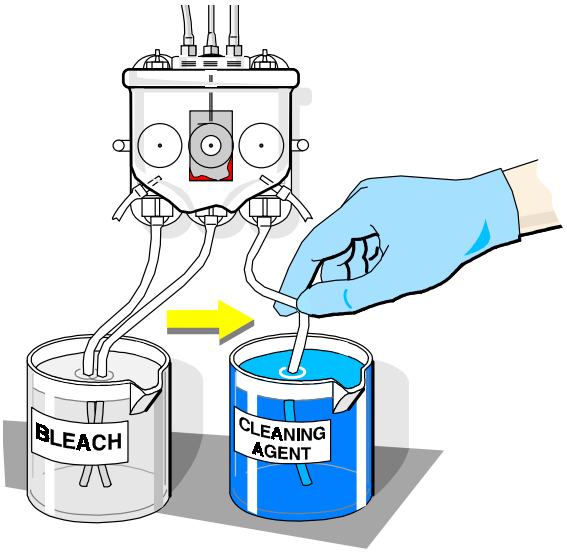
CAUTION Risk of system damage. Possible damage can occur to the instrument if the waste chamber overflows. Do not let the waste chamber get too full. Use F05 to activate solenoid 15 to drain the waste chamber as needed.

1. Fill a wash bottle with cleaning agent.
2. Connect a 20–cm (7–in.) piece of tubing to the spout of wash bottle.



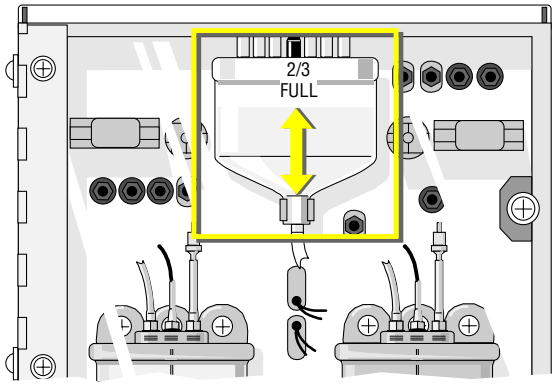
3. Fill each bath to the top with cleaning agent to remove residual bleach.
4. Go to the Diluter Keypad.
5. Press DRAIN.
6. Refill the baths with cleaning agent.
7. Press DRAIN.
8. Disconnect the wash bottle.
9. Press RINSE.
10. Ensure the baths fill with diluent and the waste chamber empties.
11. Close the aperture compartment.

H Draw cleaning agent into the RBC aperture housing and drain.



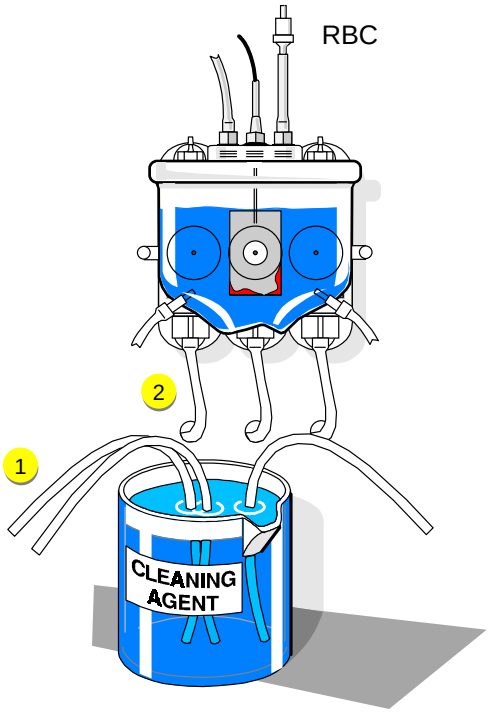
1. Transfer the ends of tubing connected to the fittings on the RBC bath from the beaker of bleach solution to the beaker containing cleaning agent.
2. Use F05 to activate solenoid 11 to draw cleaning agent into RBC aperture housing.

CAUTION Risk of damage to the instrument. Possible damage can occur to the instrument if the waste chamber overflows. Do not let the waste chamber get too full. Use F05 to activate solenoid 15 to drain the waste chamber as needed.



3. Do not let the liquid level in the vacuum isolator chamber rise above 2/3 full. Use F05 to activate solenoid 16 as needed to drain the vacuum isolator chamber.
4. Repeat steps 2 and 3 until the bleach is removed. The bleach is removed when you see cleaning agent (blue if COULTER CLENZ® cleaning agent) in the vacuum isolator chamber.

I Disconnect the tubing and reconnect the sweep-flow lines.



1. Disconnect the three lengths of tubing from the white fittings on the RBC bath.
2. Reconnect the sweep–flow lines.
3. Go to the Diluter Keypad.
4. Press DRAIN.

J Perform Extended Clear.

1. Go to the Diluter Keypad.
2. Press F 1 2 ENTER to apply 5-psi pressure to the rear of the apertures for 60 seconds. The Diluter Keypad displays EXTENDED CLEAR while the instrument performs this function. When the function completes processing, the

Diluter Keypad displays FUNCTION = 12. Press ENTER to perform this function again.

3. Press STOP to exit this function. The Diluter Keypad displays READY.

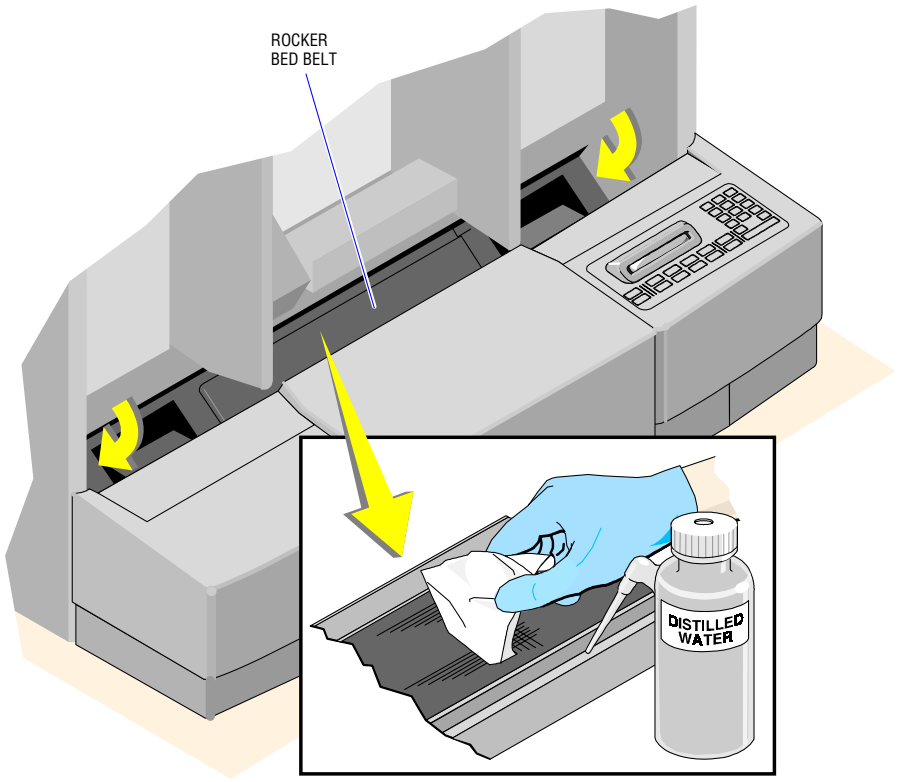
K Press SHUT DOWN.

L Press START UP.

M Prime the system by cycling whole blood in the aspiration mode you plan to use.

2.16 CLEANING THE ROCKER BED BELT

The instrument rocks the samples prior to aspiration in Automatic aspiration mode. When the compressor is off, the rocker bed is unlocked. It can be tilted easily.



1. Wipe both sides of the conveyor belt with a cloth dampened with distilled water. Use only a damp cloth, not a wet one. Be careful not to get any components wet. Do not use anything but distilled water.
2. Wipe the surfaces dry; lift the belt and thoroughly dry the underside of the belt and the rocker bed.

2.17 CLEANING THE HANDHELD SCANNER

Cleaning the Scan Window (PSC® 5312)

Note: The following information is reprinted from the PSC 5312 PSC 5312 HP/IP User's Manual by permission of PSC, Inc.

CAUTION Risk of damage to the handheld scanner. Never use solvents (e.g., alcohol or acetone) on the enclosure; they may damage the finish on the scanner.

A dirty scan window can impair scanning performance. When the window appears to be dirty or smeared, clean it by wiping with a slightly damp cloth or facial tissue. Water or a suitable cleaning solution such as Windex™. may be used on the cloth. The plastic case of your scanner can also be cleaned in this manner.

Cleaning the Scan Window (Welch Allyn® 3400)

Note: The following information is reprinted from the Welch Allyn SCANTEAM® 3400 Series Decoded Output Operating Guide and Programming Menu manual by permission of Welch Allyn, Inc.

CAUTION Risk of damage to the handheld scanner. Do not submerge the scanner in water. The scanner's housing is not water tight. Do not use abrasive wipers or tissues on the scan window: abrasive wipers may scratch the window. Never use solvents (alcohol or acetone) on the housing or window: solvents can damage the finish or the window.

Scanning performance can degrade if the scan window is not clean. If the scan window is visibly dirty, or if the scanner is not scanning well, clean the scan window with a soft cloth or tissue dampened with water (or a mild detergent-water solution). If a detergent solution is used, rinse with a clean tissue dampened with water only.

The scanner housing can also be cleaned the same way.

2.18 CLEANING VACUUM ISOLATOR CHAMBER (VIC)

Summary

WARNING Possible biohazardous condition. The VIC can contain residual biological materials and must be handled with care. Follow your laboratory's protocol for safety measures. This may include, but is not limited to, wearing protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this analyzer.

A. Prepare the VIC for cleaning.

B. Bleach the VIC.

C. Return the VIC to its original location.

D. Shut down your system.

E. Wait

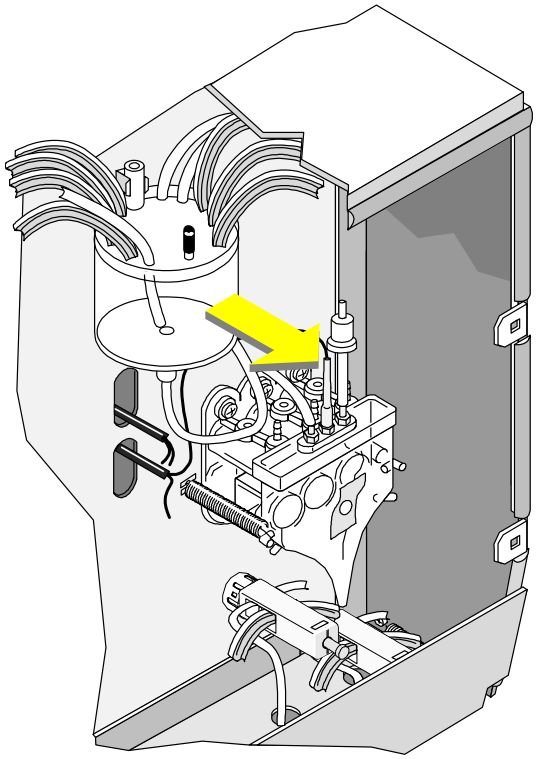
.

F. Start up your system.

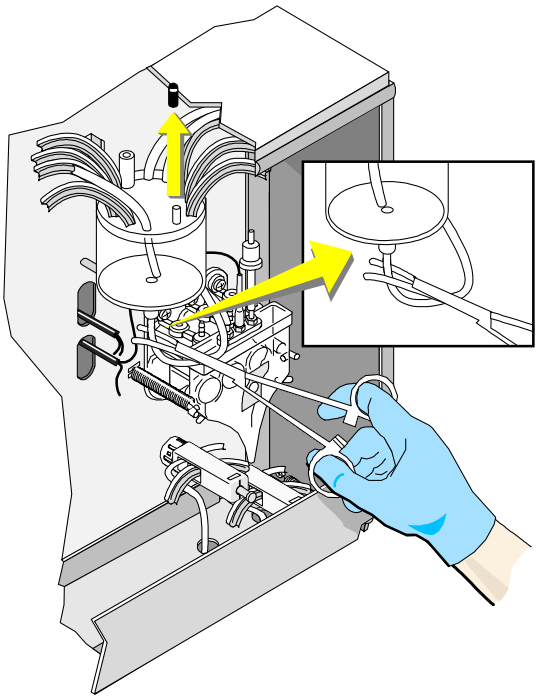
Procedure

WARNING Possible biohazardous condition. The VIC can contain residual biological materials and must be handled with care. Follow your laboratory's protocol for safety measures. This may include, but is not limited to, wearing protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this analyzer.

A Prepare VIC for Cleaning.



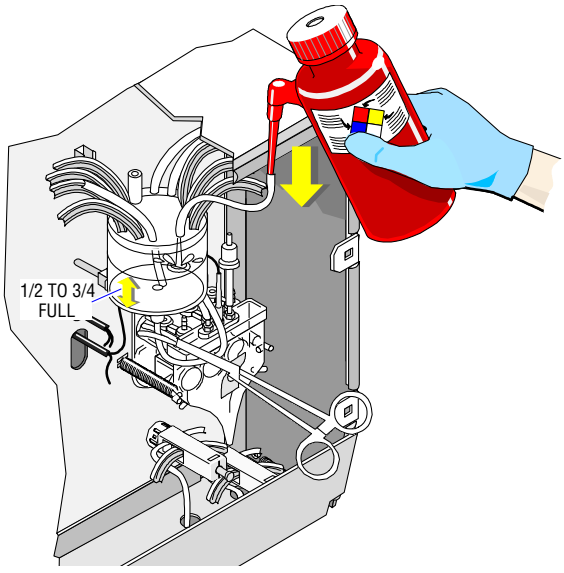
1. Ensure pneumatics are on.
2. Go to the Diluter Keypad.
3. Use F05 to activate solenoid 16 to drain the VIC and waste chamber.
4. Press POWER OFF.
5. Pull the VIC loose from holding posts.



6. Disconnect one end of the U–shaped tubing connection at the top of the VIC.
7. Use a hemostat to restrict the liquid flow by pinching the tubing at the bottom of the VIC.

B Bleach the VIC .

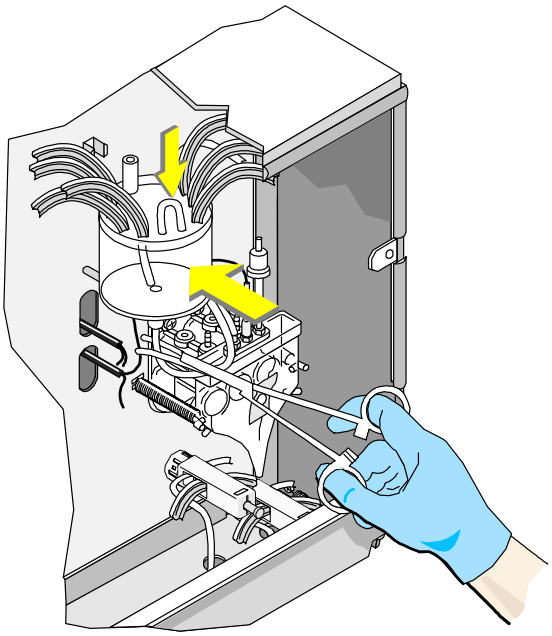
CAUTION Risk of system damage. Operating the instrument when VIC is filled with bleach can cause VIC to overflow. Do not operate instrument when the VIC is filled with bleach solution. .



1. Prepare a bleach solution.
2. Connect the bleach bottle tubing to the VIC fitting where the U–shaped tubing was disconnected.
3. Fill the VIC 1/2 to 3/4 full with bleach solution.
4. Disconnect the bleach bottle.
5. Leave the bleach solution in the VIC for

.

C Return VIC to its original location.



1. Reconnect the original U shaped tubing to the VIC.
2. Reinstall the VIC onto holding posts.
3. Open the hemostat to unpinch the tubing at bottom of the VIC.
4. Go to the Diluter Keypad.
5. Press POWER ON.
6. Use F05 to activate solenoid 16 to drain the VIC and waste chamber.

REMINDER: Final steps available in Summary procedure.

D Shut down your system.

E Wait 00:30:00 HR MIN SEC.

F Start up your system.

2.19 CLEANING WASTE CHAMBER

Summary

WARNING Possible biohazardous condition. The waste chamber can contain residual biological materials and must be handled with care. Follow your laboratory's protocol for safety measures. This may include, but is not limited to, wearing protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this analyzer.

CAUTION Risk of system damage. Operating the instrument when the waste chamber is filled with bleach solution can damage the instrument. Do not operate the instrument when the waste chamber is filled with bleach solution.

A. Prepare the waste chamber for cleaning.

B. Bleach the waste chamber.

C. Return the waste chamber to working order.

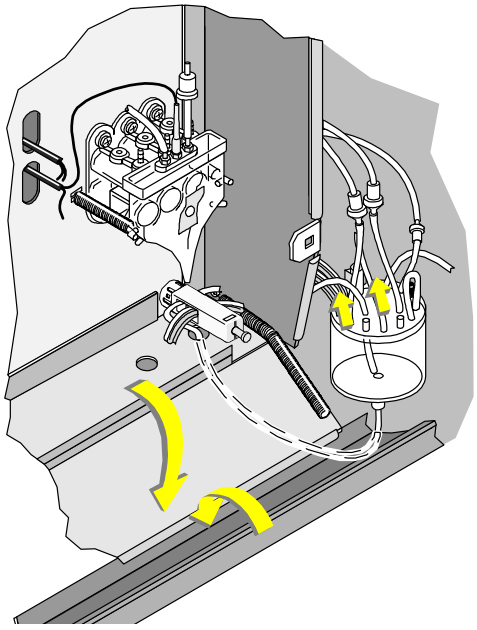
Procedure

WARNING Possible biohazardous condition. The waste chamber can contain residual biological materials and must be handled with care. Follow your laboratory's protocol for safety measures. This may include, but is not limited to, wearing protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this analyzer.

CAUTION Risk of system damage. Operating the instrument when the waste chamber is filled with bleach solution can damage the instrument. Do not operate the instrument when the waste chamber is filled with bleach solution.

A Prepare Waste Chamber for cleaning.

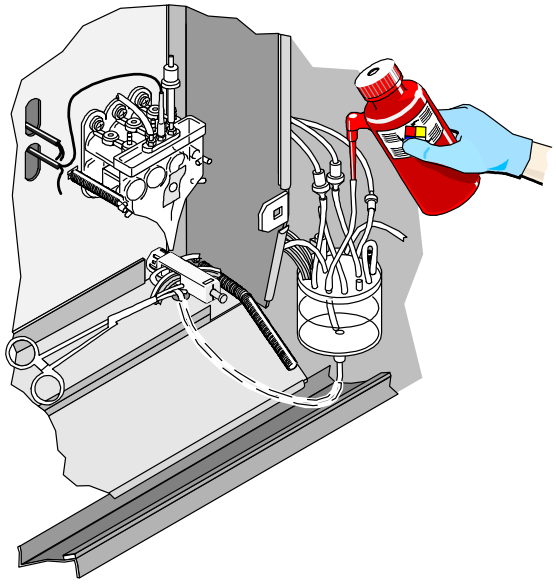
1. Ensure pneumatics are on.
2. Go to the Diluter Keypad.
3. Press DRAIN.
4. Use F05 to activate solenoid 15 to drain the waste chamber.
5. Press POWER OFF.



6. Tilt the rocker bed back to reach the waste chamber.
7. Find the fitting on top of the waste chamber with an extension inside and disconnect the tubing from this fitting.
8. Disconnect the tubing from a different fitting to vent the waste chamber.
9. Use a hemostat to restrict liquid flow by pinching the tubing at the pinch valve connected to the bottom of the waste chamber.

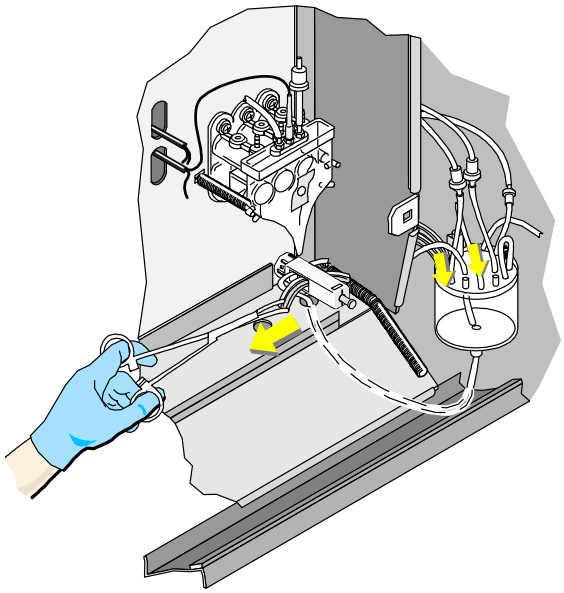
B Bleach Waste Chamber.

CAUTION Risk of system damage. Possible damage can occur to the instrument if the waste chamber overflows. Do not let the waste chamber get too full. Use F05 to activate solenoid 15 to drain the waste chamber as needed.



1. Prepare a bleach solution.
2. Connect the bleach bottle tubing to the waste chamber fitting and fill the waste chamber to the top with bleach solution.
3. Disconnect the bleach bottle.
4. Leave the bleach solution in the waste chamber for 00:15:00 (HR MIN SEC).

C Return Waste Chamber to Working Order.



1. Release the hemostat to unpinch tubing connected to the bottom of the waste chamber.
2. Reconnect the tubing at the top of the waste chamber.
3. Go to the Diluter Keypad.
4. Press POWER ON.
5. Use F05 to activate solenoid 15 to drain the waste chamber.
6. If protein deposits remain, repeat the entire procedure.

3.1 REPLACING AIR FILTERS

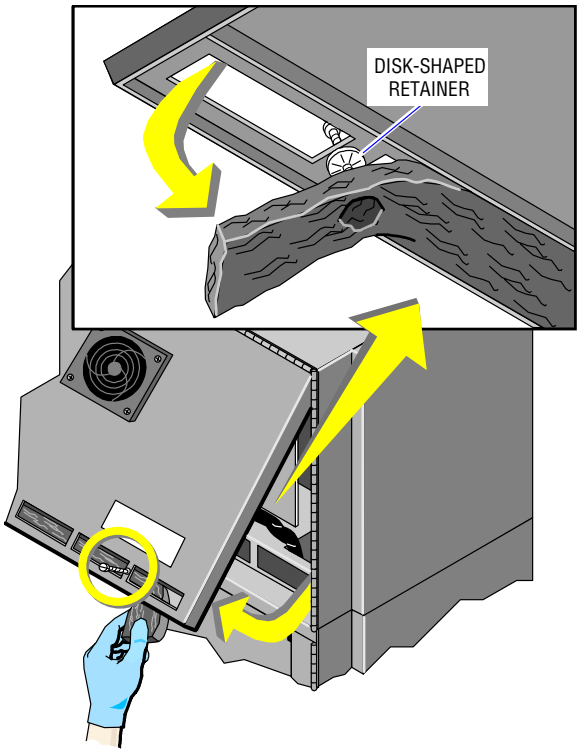
CAUTION Risk of damage to the Power Supply. A dirty air filter can cause the Power Supply to overheat. Check the filters and clean as needed.

1. Go to the Diluter Keypad.
2. Press POWER OFF.
3. Turn off the main breaker on the Power Supply.

WARNING Risk of personal injury. A shock hazard exists if the power cord is connected. Unplug the primary power cord before performing these procedures.

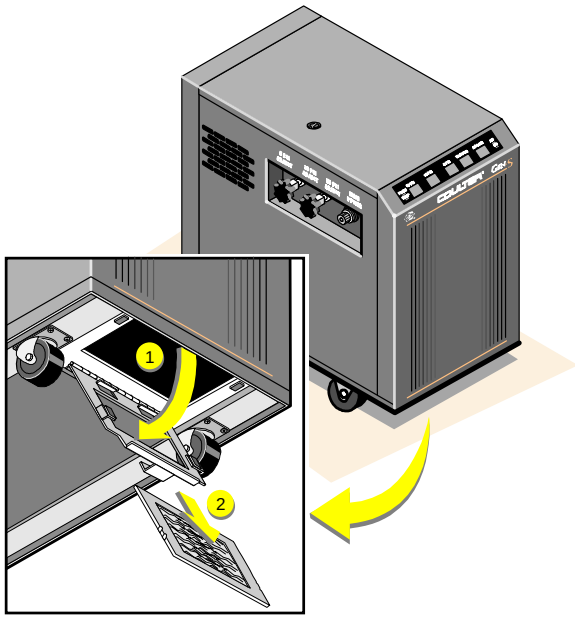
4. Disconnect the primary power cord.
5. Locate and remove the air filters:

Analyzer Air Filter



a. Loosen the screws on the back of the Analyzer.
b. Open the back of the Analyzer.
c. Pull the air filter down over the disk-shaped retainer on the screws to remove the air filter.

Power Supply Air Filter



a. Push downward on the edge of filter cover.

b. Slide the filter out.

6. Wash the filters in soap and water, rinse them and dry them completely. If you find a filter that is torn or shredded, discard it and replace it with a new one. Order replacement filters from your Coulter Representative.
7. Return the clean air filters to their original location.
8. Reconnect the primary power cord.
9. Turn on the Power Supply main breaker.
10. Go to the Diluter Keypad.
11. Press POWER ON.

3.2 REPLACING AN APERTURE BATH

Summary

A. Press DRAIN until the aperture baths drain completely into the waste chamber.

B. Press POWER OFF.

C. Turn off the main breaker on the Power Supply.

WARNING Risk of personal injury. A shock hazard exists if the power cord is connected. Unplug the primary power cord before performing these procedures.

D. Disconnect the primary power cord.

E. Unhook the bath springs and gently pull the bath out of the instrument.

F. Label and disconnect the tubing attached to left side of the aperture bath.

G. Replace the O-rings on the aperture block if you have spare O-rings available.

H. Replace the aperture bath and reconnect it.

I. Reconnect the primary power cord.

J. Turn on the main breaker on the Power Supply.

K. Check for leaks and air bubbles.

L. Close the bath compartment.

M. Reconnect the primary power cord.

N. Turn on the main breaker on the Power Supply.

O. Press START UP.

P. Run a control in CBC test mode.

Procedure

A Press DRAIN until the aperture baths drain completely into the waste chamber.

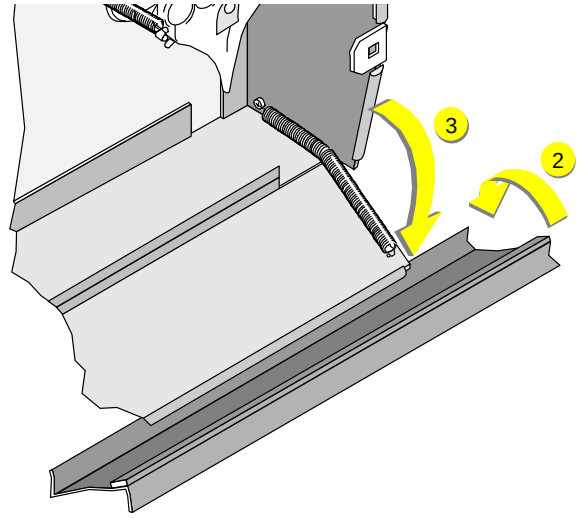
B Press POWER OFF.

C Turn off the main breaker on the Power Supply.

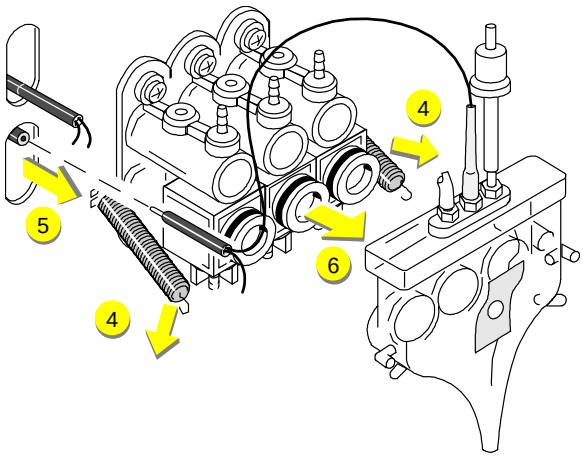
WARNING Risk of personal injury. A shock hazard exists if the power cord is connected. Unplug the primary power cord before performing these procedures.

D Disconnect the primary power cord.

E Unhook the bath springs and gently pull the bath out of the instrument.



1. Open the bath compartment.
2. Manually move the rocker bed to its backward position.
3. Pull open the compartment door beneath the baths. Keep the door open by anchoring the spring to the bottom edge.

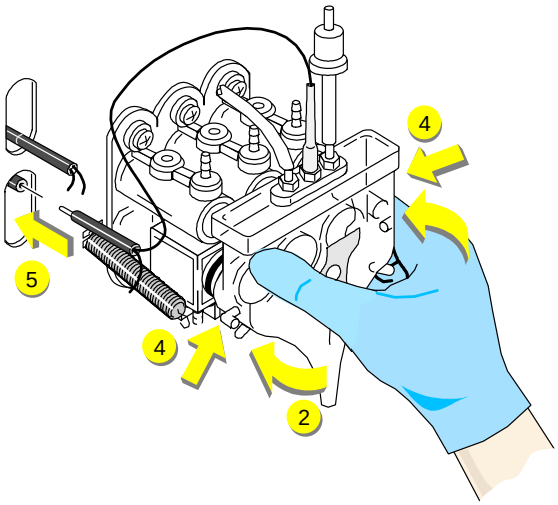


4. Unhook the spring attached to each side of the bath.
5. Disconnect the electrode cable where it attaches to the Diluter panel.
6. Using both hands, gently rock the bath off the large O–rings.

F Label and disconnect the tubing attached to left side of the aperture bath.

G Replace the O-rings on the aperture block if you have spare O-rings available.
See Heading 3.9, Replacing Aperture O-rings for this procedure.

H Replace Aperture Bath and Reconnect It.



1. Moisten the three large O-rings with distilled water.
2. Using both hands, gently rock the bath onto the large O-rings until it snaps back to its original position.
3. Ensure you properly aligned the bath with all three blocks to prevent leaking.
4. While holding the bath in place, use a hemostat to hook the springs to each side of the bath.
5. Connect the electrode cable to the center front panel.
6. Connect the labeled tubing to the new bath.

I Reconnect the primary power cord.

J Turn on the main breaker on the Power Supply.

K Check for leaks and air bubbles.

1. Go to the Diluter Keypad.
2. Press POWER ON.
3. Ensure the bath fills with diluent and the waste chamber empties.
4. Ensure the bath is not leaking.
5. Press DRAIN.
6. Ensure the bath drains.
7. Press RINSE.
8. Repeat steps 5 through 7 as needed to ensure the bath is not leaking.
9. Use F05 to activate solenoid 10 for WBC bath or 11 for RBC bath.
10. Verify that all three lines from the bath to the vacuum isolator chamber pull a bubble–free stream.

L Close the bath compartment.

M Reconnect the primary power cord.

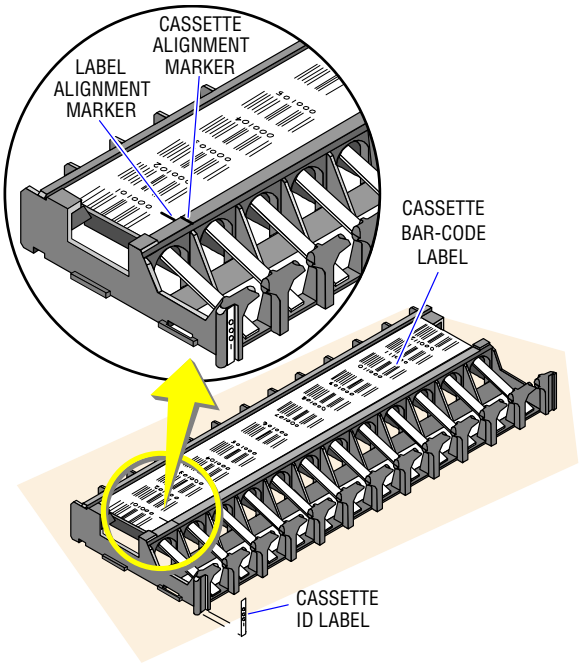
N Turn on the main breaker on the Power Supply.

O Press START UP.

P Run a control in CBC test mode.

3.3 REPLACING CASSETTE LABELS

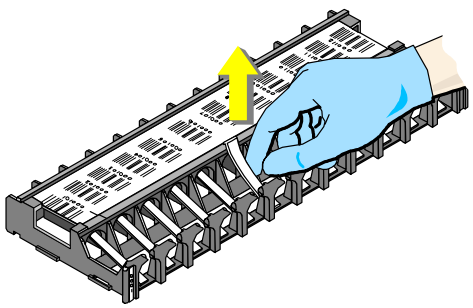
Replace worn or damaged cassette labels as needed.



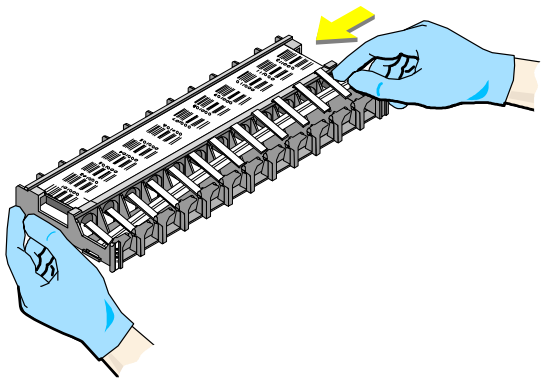
1. Remove the old label completely.
2. Place the label on the cassettes carefully; aligning the bar-code label marker with the marker on the cassette.
3. Ensure you match the cassette number on the bar-code label with the cassette ID label on the cassette.

3.4 REPLACING CASSETTE SPRING CLIP

Replace the spring clip if the fingers of the spring clip become flat and the tubes are not held securely in the cassette.



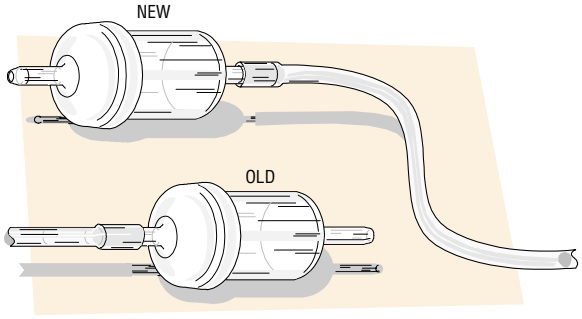
1. Grasp the spring clip in the middle of the cassette and pull it out.



2. Insert the tabs of the new spring clip into the slots in the ends of the cassette.
3. Insert a tube in each position to verify that all positions are secure.

3.5 REPLACING CHECK VALVES

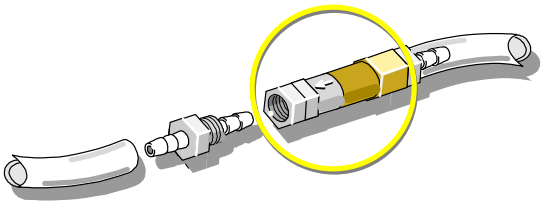
CAUTION Risk of system damage. Possible system damage can occur if you replace a check valve in a mixing bubble line to either aperture valve. Drain the baths before replacing these check valves.



1. Record the direction in which the old check valve is pointing.
2. Ensure you have the same size and type of check valve as the one you want to replace.
3. One at a time, remove the tubing connected to the old check valve and transfer it to the new check valve, to ensure the direction of the flow is correct.

3.6 REPLACING CHOKES

WARNING Possible biohazardous condition. Chokes can include residual biological material and must be handled with care. Check the tubing connection periodically. Avoid skin contact and clean up spills immediately. Dispose of the old chokes in accordance with your local regulations and acceptable laboratory procedures.



1. Ensure you use the same size (color) choke. Chokes are color-coded by size.
2. Ensure you install choke in same direction. Arrow on choke indicates direction of pressure flow.
3. Check choke fittings. If choke is wet or plugged, it may be necessary to replace fittings.

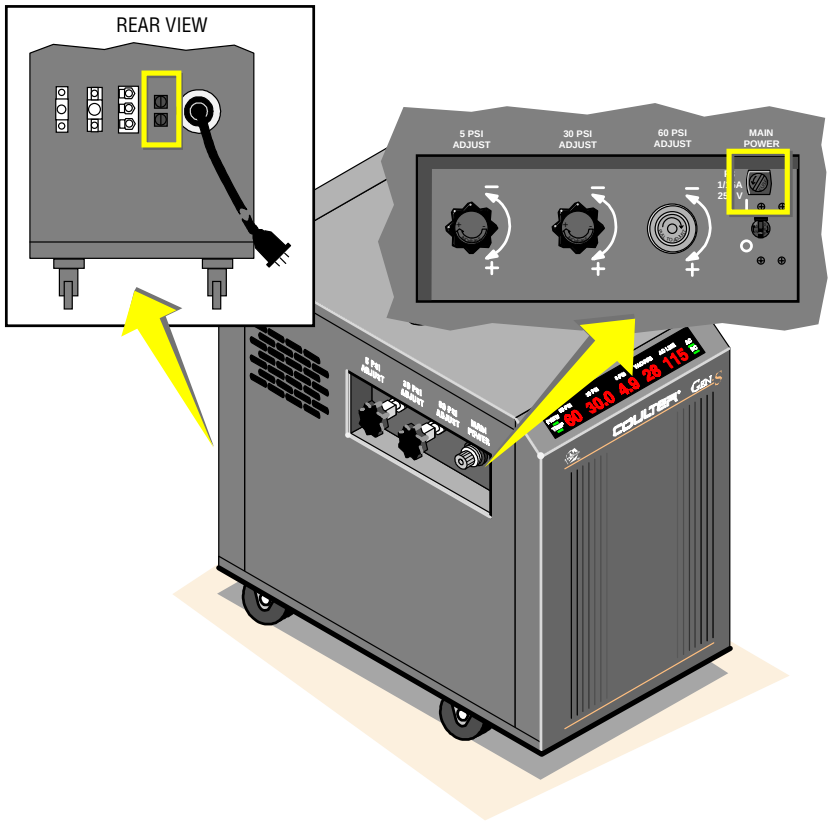
You receive a supply of chokes with your GEN•S system. Order additional chokes and fittings by calling your Coulter Representative.

3.7 REPLACING FUSES

1. Go to the Diluter Keypad.
2. Press POWER OFF.
3. Turn off the main breaker on the Power Supply.

WARNING Risk of personal injury. A shock hazard exists if the power cord is connected. Unplug the primary power cord before performing these procedures.

4. Disconnect the primary power cord.
5. Locate the fuses you want to replace.



6. Push in and turn the cap 1/4-turn . The cap will pop out of its holder when released.
7. Remove the open fuse and replace it with a fuse of the same type and rating. The amperage and voltage rating is written on the fuse. You can insert the fuse in either direction.
8. Return the fuse and its cap by inserting the fuse and turning the cap 1/4 turn while pushing in.

.

CAUTION Risk of system damage if you attempt to use the power supply when a fuse continually fails. If a fuse fails shortly after replacement, power off and call your Coulter Representative.

9. Reconnect the primary power cord.
10. Turn on the Power Supply main breaker.
11. Go to the Diluter Keypad.
12. Press POWER ON.

3.8 REPLACING NEEDLE

Summary

WARNING Possible biohazardous condition. Cotton swabs and components used in this area must be handled with care. Avoid skin contact. Dispose of components in accordance with your local regulations and acceptable laboratory procedures. Take additional care if the needle is visible, or the bellows are torn or leaking.

A. Prepare the instrument so you can replace the needle.

B. Attach the safety clip and remove the needle cartridge.

C. Clean the needle assembly area.

D. Remove the tubing.

E. Attach the tubing to the new needle.

F. Return the needle to its original location.

G. Verify control recovery.

Procedure

A Prepare Instrument for Needle Replacement.

WARNING Possible biohazardous condition. Cotton swabs and components used in this area must be handled with care. Avoid skin contact. Dispose of components in accordance with your local regulations and acceptable laboratory procedures. Take additional care if the needle is visible, or the bellows are torn or leaking.

1. Go to the Diluter Keypad.
2. Press POWER OFF.
3. Turn off the main breaker on the Power Supply.

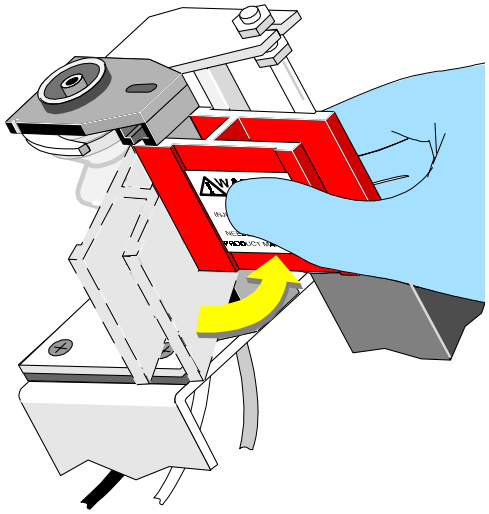
WARNING Risk of personal injury. A shock hazard exists if the power cord is connected. Unplug the primary power cord before performing these procedures.

4. Disconnect the primary power cord.
5. Open the diluter lower front door.

B Attach Safety Clip and Remove Needle Cartridge.

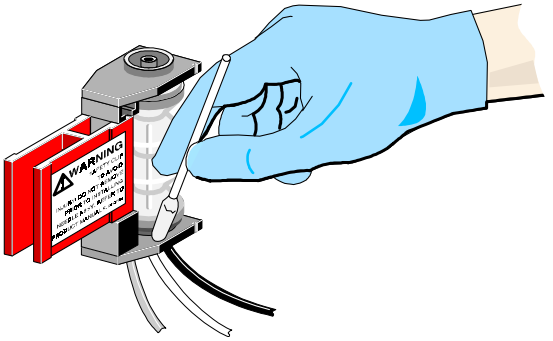
WARNING Skin puncture from the needle, which might contain biohazardous material, can occur. Handle the needle cartridge with extreme care. Always use the safety clip to remove and install the needle cartridge. This protects you from possible needle puncture.

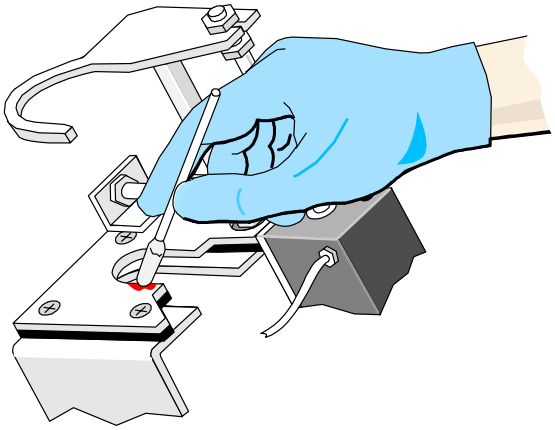
CAUTION Risk of system damage. Pulling the needle cartridge out too far can tear the tubing. Pull the cartridge out slowly.



1. Without squeezing the safety clip, fit the right edge of the safety clip into the groove on the right side of the front support of the needle cartridge.
2. Slide the safety clip to the left until its left edge enters the groove on the left side of the front support of the needle cartridge. You should hear a click.
3. Pull out the needle cartridge.

C Clean Needle Assembly Area.

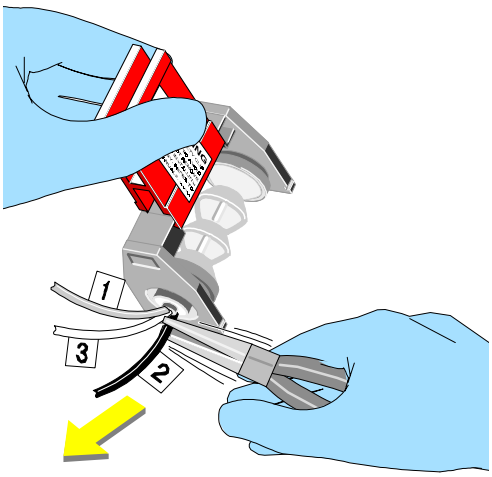




1. If there is blood on the cover:
   a. Clean the cover with a cotton swab moistened with a 50:50 solution of bleach and distilled water.
   b. Rinse another cotton swab in distilled water and wipe the same area.
2. Dip a cotton swab into a 50:50 solution of bleach and distilled water to clean upper and lower grooves where the needle assembly fits.
3. Rinse another cotton swab in distilled water and wipe the same area.

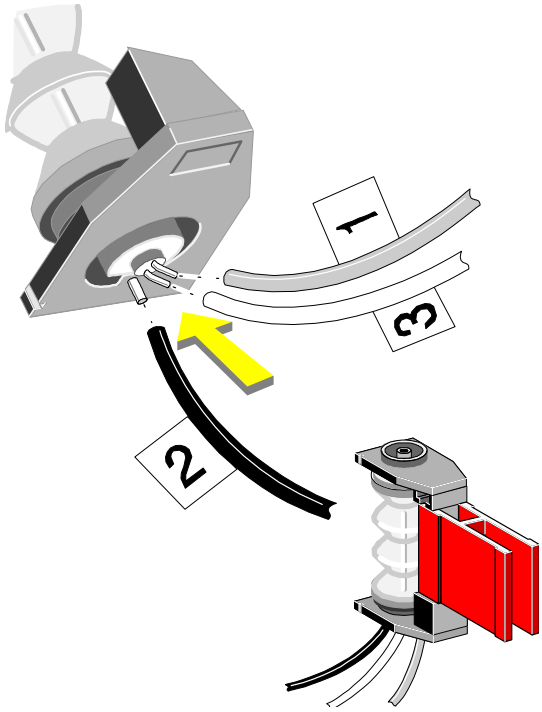
D Remove Needle Tubing.

WARNING Possible biohazardous condition. Pulling or cutting the tubing can damage the tubing causing it to leak. Do not pull or cut the tubing.



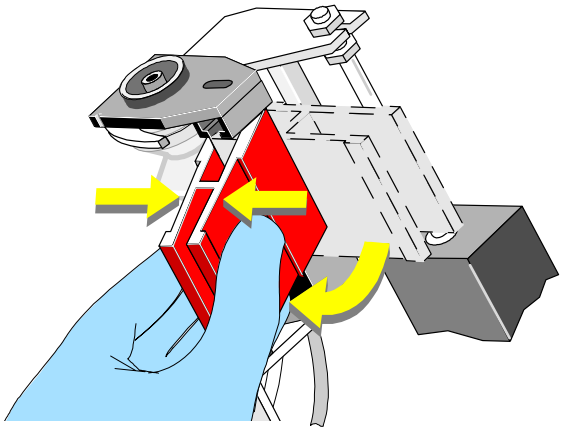
1. If necessary, label the tubing before removing it.
2. Remove the tubing by sliding it up and off its connection with needlenose pliers in the following order:
   a. Opaque silicone tubing
   b. Large black tubing
   c. Small clear tubing.
3. Discard the old needle cartridge.

E Attach Tubing to New Needle.



1. A safety clip comes attached to the new needle cartridge. If safety clip is missing, attach one before proceeding.
2. Attach the tubing to a new needle cartridge in the following order:
   a. Small clear tubing to the center port
   b. Large black tubing to the large port
   c. Opaque silicone tubing to remaining small port.

F Return Needle to Its Original Location.



1. Slide in the needle cartridge until it clicks into place.
2. Slightly squeeze the safety clip and move it a little to the right to separate the right side of the clip from the needle assembly.
3. Continue to move the clip to the left to free it from the needle assembly.
4. Save the safety clip for future use.

G Verify Control Recovery.

WARNING Risk of skin puncture. The needle can go into the pierce position after power up. Keep hands away from the needle cartridge area when you power up the instrument.

1. Close the Diluter lower front door.
2. Reconnect the primary power cord.
3. Turn on the main breaker on the Power Supply.
4. Go to the Diluter Keypad.
5. Press POWER ON.
6. Run controls in CBC test mode.
7. Check that your control results are acceptable. If they are unacceptable, ensure you:
   - Connected the tubes to the proper fittings
   - Positioned the needle cartridge properly.

3.9 REPLACING APERTURE O-RINGS

Summary

A. Press DRAIN until the aperture baths drain completely into the waste chamber.

B. Press POWER OFF.

C. Unhook the bath springs and gently pull the bath out of the instrument.

CAUTION Risk of instrument damage. If you touch the center of the block you can damage the instrument. Do not touch the aperture in the center of the block.

D. If replacing the O-rings on the RBC bath, disconnect the sweep-flow tubing.

E. Unscrew the white fitting beneath the housing.

IMPORTANT Incorrect results can occur if aperture blocks are mismatched. Remove only one aperture block at a time to avoid mismatching the apertures.

F. Pull the block out.

G. Replace the defective O-rings.

H. Return the aperture block to its original location.

I. Repeat steps C through H for the remaining aperture blocks.

J. Return the bath and reconnect it.

K. Check for leaks and air bubbles.

L. Close the bath compartment.

M. Run a control.

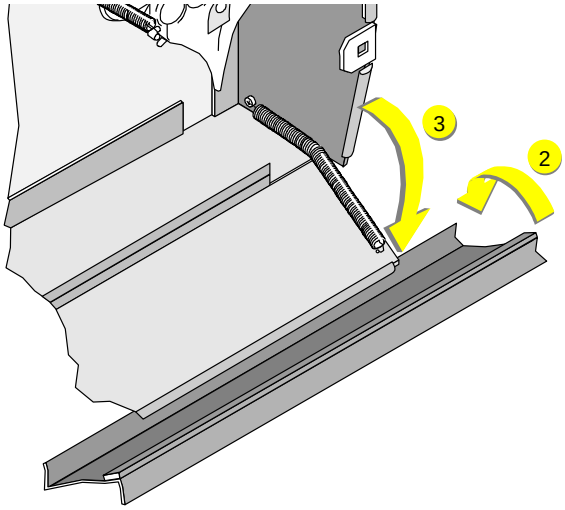
N. Review the control results.

Procedure

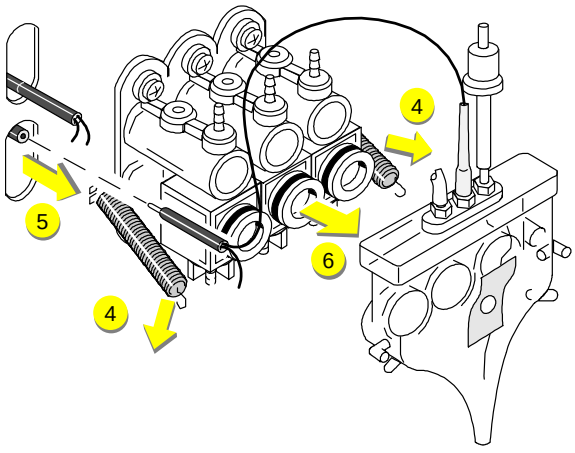
A Press DRAIN until the aperture baths drain completely into the waste chamber.

B Press POWER OFF.

C Unhook the bath springs and gently pull the bath out of the instrument.



1. Open the Diluter.
2. Manually move the rocker bed to its backward position.
3. Pull open the compartment door beneath the baths. Keep the door open by anchoring the spring to the bottom edge.

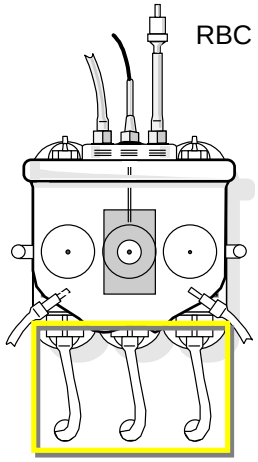


4. Unhook the spring attached to each side of the bath.
5. Disconnect the electrode cable where it attaches to the Diluter panel.
6. Using both hands, gently rock the bath off the large O–rings.

CAUTION Risk of instrument damage. If you touch the center of the block you can damage the instrument. Do not touch the aperture in the center of the block.

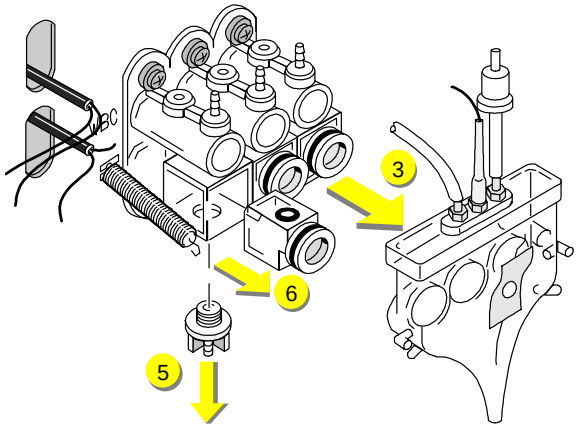
IMPORTANT Incorrect results can occur if aperture blocks are mismatched. Remove only one aperture block at a time to avoid mismatching the apertures.

D If replacing the O-rings on the RBC bath, disconnect the sweep-flow tubing.

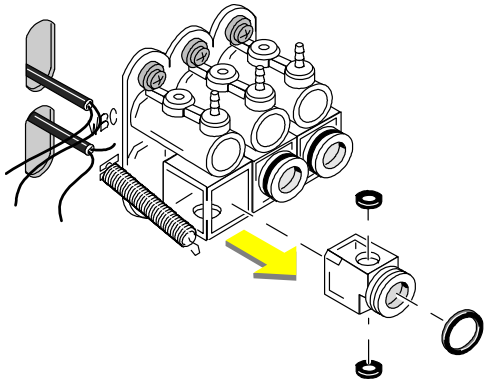


E Unscrew the white fitting beneath the housing.

F Pull the block out.

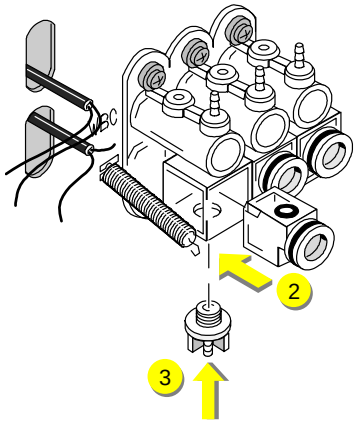


G Replace Defective O-rings.



1. Remove and discard the defective O-rings.
2. Fit the new O-rings onto the block.

H Return the aperture block to its original location.



1. Rinse the rim of the aperture block with distilled water and dry it.
2. Align the aperture block so the beveled edge is at the top left corner, and put it back into its housing.
3. Tighten the white fitting with fingers only.
4. If replacing the O-rings on the RBC bath, reconnect the sweep-flow tubing.

I Repeat steps C through H for the remaining aperture blocks.

J Return the bath and reconnect it.

K Check for leaks and air bubbles.

L Close the bath compartment.

M Run a control.

N Review the control results.

3.10 REPLACING PINCH VALVES

Summary

A. Go to the Diluter Keypad.

B. Ensure the tubing you want to replace does not contain reagent prior to replacing it.

C. Ensure you have the same size and type of pinch valve as the one you want to replace.

D. For reference, make a drawing of the path the tubing takes through the nonfunctioning valve.

E. Remove the pinch valve tubing and pinch valve.

F. Install the tubing and new pinch valve.

G. Check the drawing you made in step D. Make sure the tubing is properly routed.

H. Press START UP.

I. If necessary, prime the reagent associated with the tubing.

J. Run a sample. Make sure that the new valve is correctly connected and there are no leaks.

Procedure

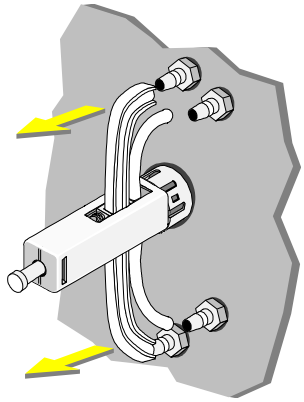
A Go to the Diluter Keypad.

B Ensure the tubing you want to replace does not contain reagent prior to replacing it.

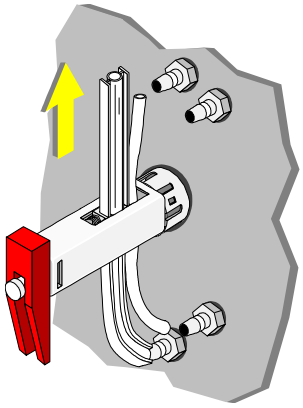
C Ensure you have the same size and type of pinch valve as the one you want to replace.

D For reference, make a drawing of the path the tubing takes through the nonfunctioning valve.

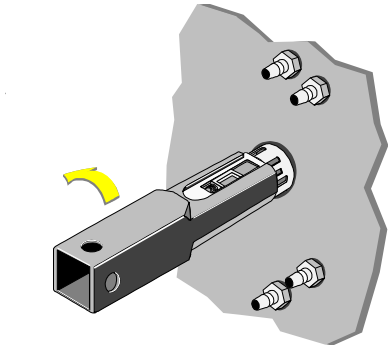
E Remove the Pinch Valve Tubing and Pinch Valve.



1. Disconnect the tubing that goes through the pinch valve at the fitting closest to the pinch valve.

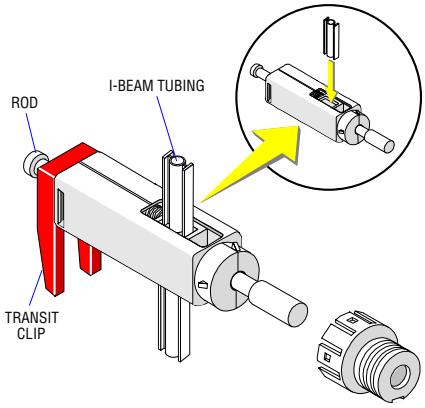


2. Attach a red shipping clip to hold open the valve.
3. Pull the tubing through the pinch valve.
4. Remove the red shipping clip.

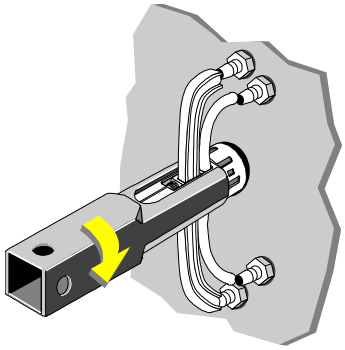


5. Using the pinch valve wrench, turn the pinch valve about 1/4-turn until it snaps out.

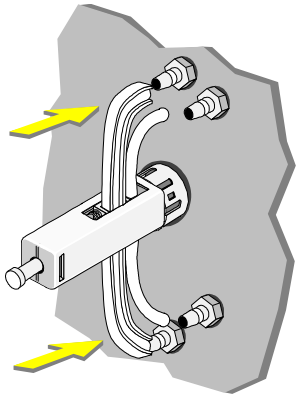
F Install the tubing and new pinch valve.



1. Use a red shipping clip to hold open the valve.
2. Thread the I-beam tubing through the valve.
3. Remove the red shipping clip.



4. Line up the valve to start the 1/4-turn twist based on where you want the valve to end.
5. Using the pinch valve wrench, push in and turn the valve until it seats.



6. Attach the tubing to the fittings.

G Check the drawing you made in step D. Make sure the tubing is properly routed.

H Press START UP **.**

I If necessary, prime the reagent associated with the tubing.

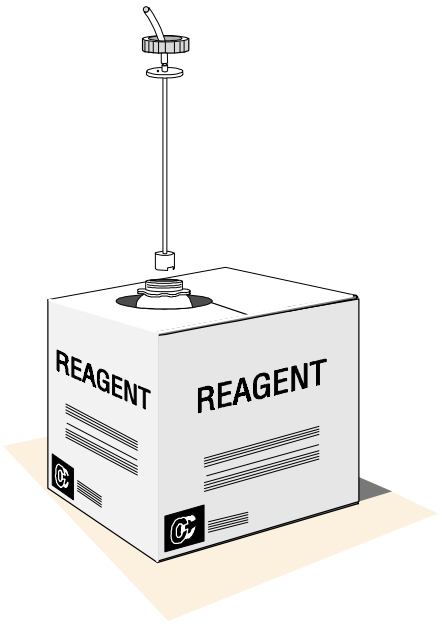
J Run a sample. Make sure that the new valve is correctly connected and there are no leaks. Refer to the Operator's Guide for this procedure.

3.11 REPLACING REAGENT CONTAINERS

WARNING Some replaceable items can come in contact with residual biological material. Skin contact with these materials can be harmful to your health. Dispose of these items in accordance with your laboratory procedures.

IMPORTANT Incorrect results can occur if the tubes become contaminated. Do not touch the tubes or let them touch any laboratory surfaces. If the tubes touch anything, rinse them with distilled water and then wipe them with a lint-free tissue.

1. Remove any cardboard cutouts.
2. Remove the cap and seal from the new reagent container. Be sure to completely remove the foil seal.



3. Remove the plastic collar that secures the pickup tube assembly.
4. Unscrew the pickup tube assembly from the old container.
5. Lift the assembly straight up and out.

6. Inspect the pickup tube for damage, and replace it if necessary.
7. Carefully insert the pickup tube assembly straight into the new container.
8. Tighten the cap.
9. Insert the plastic collar that secures the pickup tubes.
10. Record the new container's information in Quality Assurance Set Up, in your laboratory logbook and on the reagent package.
11. Ensure the pneumatics are on.

Recording Information in Your Logbook

Record the new reagent information in your laboratory's

by:

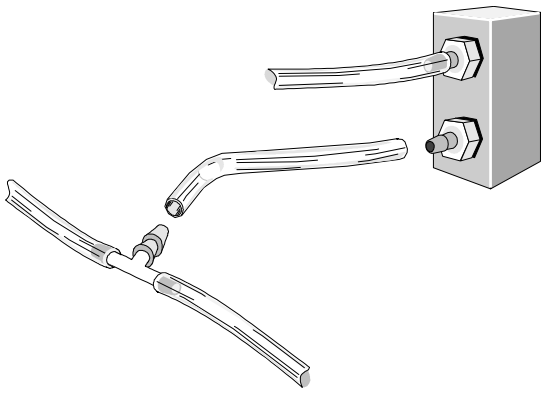
- Selecting after providing the information in Quality Assurance Set Up, and then including the printout in your logbook
- Writing the information directly in your logbook.

3.12 REPLACING TUBING

WARNING Possible biohazardous condition. Tubing can come in contact with biohazard materials. Skin contact with these materials can be harmful to your health. Handle and dispose of tubing in accordance with your laboratory's procedures.

CAUTION Risk of damage to tubing. Using alcohol or any liquid to lubricate the tubing when you replace it can damage the tubing. Do not lubricate the tubing when you replace it.

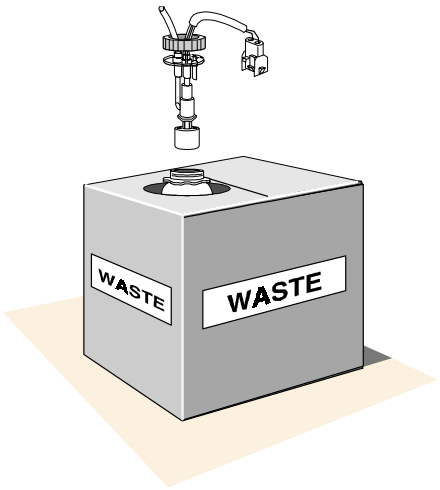
IMPORTANT Incorrect results can occur if you change the length of tubing. If tubing tears or becomes damaged, replace it with a new piece of tubing of the same type and length. If you need tubing, call your Coulter Representative.



1. Carefully push the tubing straight onto the fitting.
2. Ensure it is securely in place.

3.13 REPLACING WASTE CONTAINER

WARNING Possible biohazardous condition. The contents of the old waste container and its associated tubing can include residual biological material and must be handled with care. Check the tubing connection and container location periodically. Avoid skin contact and clean up spills immediately. Dispose of the contents of the waste container in accordance with your local regulations and acceptable laboratory procedures.



1. Unscrew the pickup tube assembly from the old container.
2. Lift the pickup tube assembly straight out of the old container.
3. Place the pickup tube assembly straight into the new container and screw it into position.
4. Label the new waste container and verify that the old container is clearly labeled, then discard old container according to your laboratory's standards for biohazardous material.

4.1 CHANGING TEST MODE

1. Go to the Analyzer screen.
2. Press TEST MODE from the MAIN MENU screen or the SYSTEM RUN screen.
3. Press the key next to the mode of operation you want:

CBC/DIFF/RETIC	Run samples for CBC, Diff and Retic.
CBC/DIFF	Run samples for CBC and Diff.
CBC ONLY	Run samples for CBC only.
CBC/RETIC	Run samples for CBC and Retic.
RETIC ONLY	Run samples for Retic only.

The CURRENT MODE message displays the test mode you select.

4. Press SYSTEM RUN. The GEN•S System prepares for sample analysis in the selected test mode. The SYSTEM RUN screen displays the current test mode. Example: MODE: C/D/R

4.2 CHANGING ANALYZER ALARM SETTINGS

1. Go to the Analyzer screen.
2. Select MAIN MENU.
3. Select SYSTEM CONFIGURATION.
4. Select ALARM SET UP.

CAUTION System damage could occur if an alarm is ignored. If you disable the alarm, audible alarms will no longer be available. Ensure you check the Analyzer alert line and the Diluter Keypad for alarms.

5. Specify whether you want each alarm enabled or disabled:

DILUTER SWITCH PANEL ALARM	Sounds whenever you press a key on the Diluter Keypad.
LONG ALARM	Sounds whenever you press an illegal key on the Diluter Keypad.
CONTINUOUS ALARM	Sounds whenever the instrument identifies an alert condition.

6. Press one of the following:

MAIN MENU	To display the Analyzer MAIN MENU screen.
SYSTEM RUN	To cycle samples.
RETURN	To display the SYSTEM CONFIGURATION screen.

4.3 TURNING PNEUMATICS OFF

1. Go to the Analyzer screen.
2. Select MAIN MENU.

3. Select TURN PNEUMATICS OFF. The compressor turns off, the Diluter Keypad displays COMPRESSOR OFF and the Analyzer screen turns off. Wait at least 30 seconds before you turn pneumatics back on.

4.4 ADJUSTING HGB LAMP VOLTAGE

1. Verify that the baths contain diluent, not cleaning agent.
2. Go to the Analyzer screen.
3. Press MAIN MENU.
4. Press ANALYZER FUNCTIONS.
5. Press HGB LAMP ADJUST. Messages indicating the status of the Hgb Lamp Adjust function appear on the screen. If the voltage appears out of range, call your Coulter Representative.
6. Press SYSTEM RUN.
7. Cycle a sample of diluent in Manual aspiration mode.
8. Verify that the Hgb-blank and Hgb-sample voltages are between 7.5 V and 9.5 V.
9. Record the readings in your

.

4.5 SETTING UP BAR-CODE CONFIGURATION

Note: Use this procedure to indicate the number of digits only when you use Interleaved 2-of-5 bar-code labels for sample tubes.

1. Go to the Analyzer screen.
2. Press MAIN MENU.
3. Press SYSTEM CONFIGURATION.
4. Press NUMBER OF BAR CODE DIGITS (2 OF 5) XX, where XX represents the current number of bar code digits.
5. Go to the Diluter Keypad. It displays VALUE? XXXX
6. Use the Keypad to specify the number of digits (from 03 through 11).
7. Press **ENTER** after specifying the number of digits.
8. Go to the Analyzer screen.
9. Confirm the number you specified appears on the Analyzer screen.
10. Press one of the following:

SYSTEM RUN	To cycle samples.
RETURN	To display the Analyzer MAIN MENU screen.

4.6 ENABLING/DISABLING BLOOD DETECTOR

1. Go to the Analyzer screen.

2. Press MAIN MENU.
3. Press SYSTEM CONFIGURATION.
4. Press BLOOD DETECTOR until the appropriate setting appears.

   Note: The system flags all parameters with a **P** (partial aspiration) when samples are analyzed with blood detectors disabled.
5. Press one of the following:

SYSTEM RUN	To cycle samples.
RETURN	To display the Analyzer MAIN MENU screen.

4.7 SETTING UP ANALYZER DATE FORMAT

1. Go to the Analyzer screen.
2. Press MAIN MENU.
3. Press ANALYZER FUNCTIONS.
4. Press DATE AND TIME.
5. Press FORMAT until the date format you want to use appears:
   - MM/DD/YY
   - DD/MM/YY
   - YY/MM/DD

   where MM = Month, DD= Day, and YY= last two digits of the Year
6. Press one of the following:

MAIN MENU	To display the Analyzer MAIN MENU screen.
SYSTEM RUN	To cycle samples.
RETURN	To display the ANALYZER FUNCTIONS screen.

4.8 SETTING UP ANALYZER DATE AND TIME

1. Go to the Analyzer screen.
2. Press MAIN MENU.
3. Press ANALYZER FUNCTIONS.
4. Press DATE AND TIME.
5. Press SET DATE & TIME.
6. Press the button for the setting you want to set up. Example: Press MONTH.
7. Go to the Diluter Keypad.
8. Press the value associated with the setting you want to specify. Each setting must be entered as a two-digit number. Example: Press **0** **9** and then press **ENTER**.
9. Repeat steps 6 through 8 for each setting you want to specify.

10. Press one of the following:

SYSTEM RUN	To cycle samples.
RETURN	To display the DATE & TIME screen.

4.9 SETTING UP FLOW CELL AUTOSTOP

1. Go to the Analyzer screen.
2. Select MAIN MENU.
3. Select SYSTEM CONFIGURATION.
4. Select FLOW CELL ERRORS AUTO STOP.
5. Press one of the following:

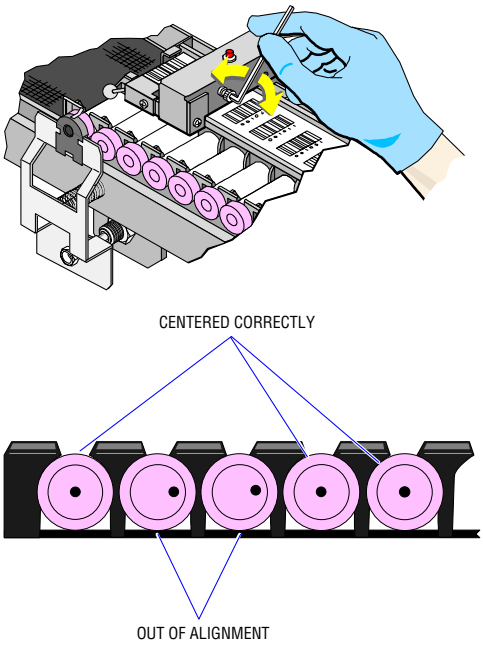
SYSTEM RUN	To cycle samples.
RETURN	To display the SYSTEM CONFIGURATION screen.

4.10 ADJUSTING TUBE DETECTOR

If your system produces multiple aspiration alarms when using Automatic aspiration mode, you may need to adjust the tube detector.

1. Place a cassette of empty, stoppered tubes on the rocker bed.
2. Ensure the pneumatics are on.
3. Use F96 to advance the cassette position.
   a. Place a cassette containing tubes in each cassette position on the rocker bed to the right of the tube detector.
   b. Go to the Diluter Keypad.
   c. Press F 9 6 ENTER to move the cassette through the piercing station one tube position at a time. The Diluter Keypad displays TUBE ADVANCE while the instrument performs this function.
   d. Press STOP to stop the tube advance. The Diluter Keypad displays FUNCTION = 96. To perform this function again, place the cassette on the rocker bed to the right of the tube detector and press ENTER.
   e. Press STOP to exit this function. The Diluter Keypad displays READY.

f. Remove the cassette from the rocker bed.



4. Use an Allen wrench in the recessed socket of the adjustable screw to move the spacer as needed.
   - Clockwise moves the sensor to the right.
   - Counterclockwise moves the sensor to the left.
5. Verify that the needle centers directly on the tube stoppers. If the detector fails to hold the adjustment, call your Coulter Representative.

4.11 CONFIGURING HANDHELD SCANNER (PSC 5312)

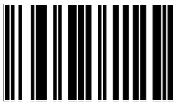
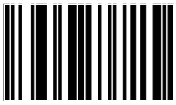
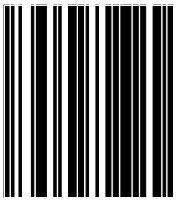
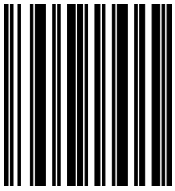
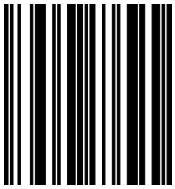
By default, your scanner contains the following configuration:

Table 4.1 Handheld Scanner Configuration (PSC 5312)

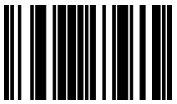
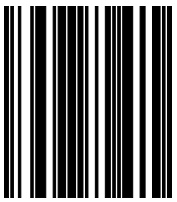
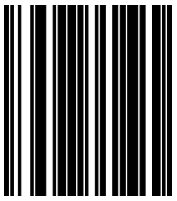
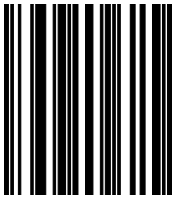
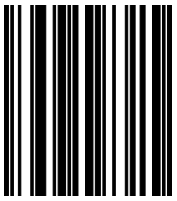
Option	Default
Automatic tab to next field	Enabled
Code 39	Enabled Check Character: Enabled; Do not transmit Minimum character length: 03 Maximum character length: 09 Start/Stop character: Do not transmit
Code I-2 of 5 (AIM®)	Enabled Check Character: Enabled; Do not transmit Minimum character length: 04 Maximum character length: 11
Codabar (standard NW-7)	Enabled Check Character: AIM Checksum Algorithm Enabled; Do not transmit Minimum character length: 03 Maximum character length: 09 Start/Stop character: Do not transmit
Code 128	Enabled Check Character: Enabled; Do not transmit Minimum character length: 03 Maximum character length: 11

By printing out this help and scanning the following bar codes, you can configure additional options. When you hear two beeps, the scanner has accepted the configuration information.

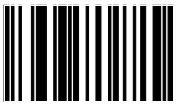
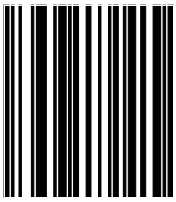
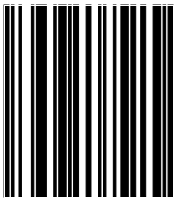
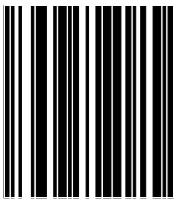
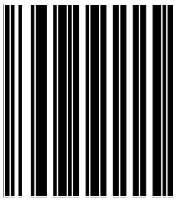
Code 39

Scan This Bar Code	For This Result
	Set minimum length for Code 39. After scanning this code, scan the appropriate two-digit selection to specify the desired length.
	Set maximum length for Code 39. After scanning this code, scan the appropriate two-digit selection to specify the desired length.
	Enable Full ASCII Code 39.
	Enable Code 39 checksum.
	Disable Code 39 checksum

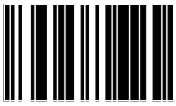
Interleaved 2-of-5

Scan This Bar Code	For This Result
	Set minimum length for Interleaved 2-of-5. After scanning this code, scan the appropriate two-digit selection to specify the desired length. Length must be multiple of two. All entries are rounded up to the next even number.
	Set maximum length for Interleaved 2-of-5. After scanning this code, scan the appropriate two-digit selection to specify the desired length. Length must be multiple of two. All entries are rounded up to the next even number.
	Enable (AIM) Interleaved 2-of-5 checksum.
	Disable (AIM) Interleaved 2-of-5 checksum.
	Enable Coulter Corporation Interleaved 2-of-5 checksum.
	Disable Coulter Corporation Interleaved 2-of-5 checksum.

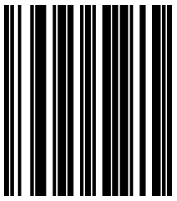
Codabar

Scan This Bar Code	For This Result
	Set minimum length for Codabar. After scanning this code, scan the appropriate two-digit selection to specify the desired length.
	Set maximum length for Codabar. After scanning this code, scan the appropriate two-digit selection to specify the desired length.
	Enable (AIM) Codabar checksum.
	Disable Codabar checksum (disable all Codabar checksum techniques).
	Enable Coulter Corporation Codabar checksum.
	Enable NW-7 Japan Red Cross Codabar as follows: Check Character: Japan Red Cross Algorithm Enabled; Do not transmit Required data digits: 09 Start/Stop character: Do not transmit.

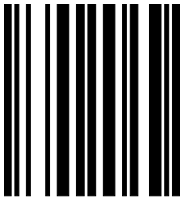
Code 128

Scan This Bar Code	For This Result
	Set minimum length for Code 128. After scanning this code, scan the appropriate two-digit selection to specify the desired length.
	Set maximum length for Code 128. After scanning this code, scan the appropriate two-digit selection to specify the desired length.

Reset to Coulter Corporation Defaults

Scan This Bar Code	For This Result
	Reset to Coulter Corporation defaults.

Digit Selection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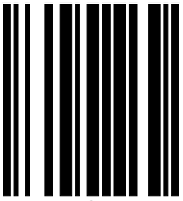
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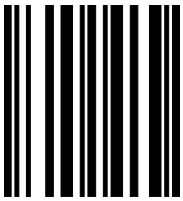
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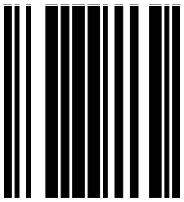
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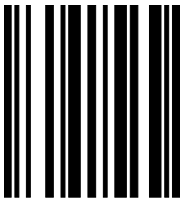
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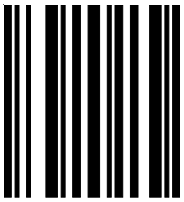
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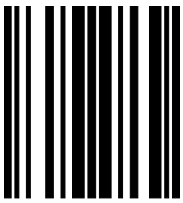
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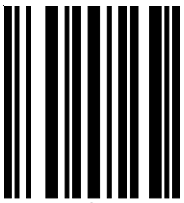
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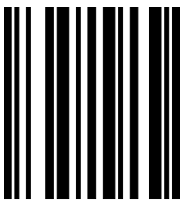
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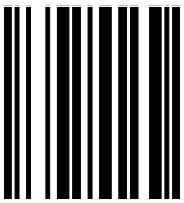

0

5.1 OVERVIEW

Data Review

A review of instrument data, such as background, control and blood sample results, is helpful in detecting problems. Sometimes a questionable blood sample result is the only symptom of subtle reagent or pneumatic problems. In that case, you can use the questionable parameter result as a clue to the location of the malfunction.

Specimen-Related Problems

An instrument problem is differentiated from a specimen-related problem by running a control. If the control results are acceptable, the problem is probably specimen-related.

Instrument Problems

If the control results show similar problems, it indicates an instrument problem. The next step is to determine the subsystem (electronic, pneumatic/hydraulic, or reagent) causing the problem. Because it is easiest to detect a problem in the electronic subsystem and hardest to detect a problem in the reagent subsystem, the subsystems are usually checked in the following order: electronic, pneumatic/hydraulic, reagent.

Workstation Troubleshooting

If the Workstation encounters a problem, it tries to display a message. The message describes the problem and provides information about how to avoid or fix the problem. For best results, follow the instructions with the messages.

Some messages appear from the Windows NT™ operating system and other software packages that are included on your Workstation. Because these messages may not be logged by the Workstation and may not have online help available for them, it is important that you write these down and call your Coulter Representative.

If your Workstation is connected to a network, some messages may be caused by your network configuration. If you have a local network administrator or a Windows NT Administrator, contact your administrator prior to calling your Coulter Representative. Your administrator may be able to resolve the problem.

Note: During the course of testing the Workstation, specific intermittent problems have been reported and corrective actions have been determined. You may want to review the Problem List periodically to help avoid these problems.

Electronic Troubleshooting

Detecting a problem in the electronic subsystem--or eliminating the electronic subsystem as the source of the problem--is simplified by indicators and electronic tests.

Indicators

An indicator may inform you that a problem exists; it may also pinpoint the source of a problem. For example, the pneumatic light on the power supply appears red when a problem exists.

Electronic Tests

The electronic subsystem checks, ramp pulse, and precision pulse tests bypass the pneumatic/hydraulic and reagent subsystems. Therefore, when these test results are out of tolerance, the problem is in the electronic subsystem.

Correcting Electronic Problems

Although you may be able to correct minor problems, such as loose cables, most electronic problems require the assistance of your Coulter Representative.

Pneumatic/Hydraulic Troubleshooting

Most pneumatic/hydraulic problems are detected by observing the Diluter section in operation. When you identify a symptom of a malfunction, try to isolate the malfunction to the specific part of the cycle, for example, during preparation, counting, or cleanup. Then, try to isolate the malfunction to the specific components and tubing. Next, look for one of four possible problems--pinched tubing, plugs, leaks, or defective components.

Pinched Tubing

When tubing is pinched, flow is either restricted or stopped. Tubing most often pinches where it passes through, between, or around something, or where it attaches to a fitting. Examples: tubing passing through a pinch valve, around a panel, or between two hard objects.

Plug

A plug, like a pinch, restricts or stops a flow. A plug can be composed of liquid, salt, or debris. This type of problem may be hard to find because it often occurs inside other components. A plug can occur in tubing, in a fitting, at an aperture, or in a choke.

Plugs are most common in vacuum lines and waste paths that involve the use of fluids and air.

Leak

A leak allows fluid to escape before reaching its destination. If there is a leak in a pneumatic line, the pneumatic signal may fail to operate a component, such as a pinch valve, pump, or diluent dispenser. A leak generally occurs where one component attaches to another, such as where tubing attaches to a fitting, a housing, a pilot actuator, a pump, or the Blood Sampling Valve. Leaks can also be the result of cracks in components, such as pumps or glassware.

Defective Components

The interrelationship of components performing a pneumatic/hydraulic process can make it difficult to determine which component, if any, is defective. For example, if a pinch valve does not open, it is possible the pinch valve is defective. But it is also possible that the solenoid responsible for activating the pinch valve is defective.

Correcting Pneumatic/Hydraulic Problems

You can correct most pneumatic/hydraulic problems, including defective components.

Reagent Troubleshooting

A reagent problem can be as obvious as precipitate in the reagent tubing. In the less obvious cases, the most effective way of detecting a problem is by keeping a log of the lot numbers with the opening and expiration dates of the reagents in use, and knowing how each reagent affects the data. Refer to the labeling information with your reagents for details.

Correcting Reagent Problems

You can correct most reagent problems by changing the container of reagent and priming the instrument with the new reagent.

5.2 DILUTER FUNCTIONS

Activating and Restoring Solenoid to its Original State

1. Go to the Diluter Keypad.
2. Press F 0 5 ENTER to manually activate a specific solenoid.
   The Diluter Keypad displays SOLENOID XXX.
3. Press the buttons corresponding to the solenoid you want to activate and press ENTER. The Diluter Keypad displays SOLENOID NNN, where NNN is the solenoid you specified while processing your request.
4. Press:

ENTER	To return the solenoid to its original state.
STOP (once)	To return the Diluter Keypad to the SOLENOID XXX state. You can now specify another solenoid.
STOP (2 times)	To return the solenoid to its original state if no other solenoid was selected. The Diluter Keypad displays READY.
STOP (3 times)	To return the solenoid to its original state if another solenoid was selected. The Diluter Keypad displays READY.
.	To activate the solenoid number following the number you specified.
ID	To activate the solenoid number preceding the number you specified.

Activating and Keeping Solenoid Active

1. Go to the Diluter Keypad.
2. Press F 9 0 ENTER to manually activate a specific solenoid. The Diluter Keypad displays SOLENOID XXX.

3. Press the buttons corresponding to the solenoid you want to activate and press ENTER. The Diluter Keypad displays SOLENOID NNN, where NNN is the solenoid you specified while processing your request. After processing your request, the solenoid maintains its current state and the Diluter Keypad displays SOLENOID XXX.

   Specify another solenoid number and press ENTER to perform this function on another solenoid.

4. Press STOP to exit this function. The Diluter Keypad displays READY.

Verifying Backwash Tank Operation

1. Go to the Diluter Keypad.
2. Press F 3 0 ENTER to:
   - Fill the backwash tank
   - Drain the backwash tank
   - Check the backwash tank level.

   The Diluter Keypad displays BACKWASH TANK CHECK while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 30. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Dispensing CBC Lytic Reagent

1. Go to the Diluter Keypad.
2. Press F 2 7 ENTER to dispense 1.04 mL CBC lytic reagent into the WBC bath.

   Note: This function is not intended for priming CBC lytic reagent.

   The Diluter Keypad displays CBC LYSE while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 27.

   Press ENTER to perform this function again.
3. Press STOP to exit this function. The RBC and WBC baths drain. The Diluter Keypad displays READY.

Cleaning Apertures

1. Go to the Diluter Keypad.
2. Press F 0 1 ENTER to apply current across the apertures. The current removes protein or debris from the apertures. The Diluter Keypad displays CLEAN

APERTURES while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 01. Press ENTER to perform this function again.

3. Press STOP to exit this function. The Diluter Keypad displays READY.

Running Latex Control—Diff and Retic

1. Check the instrument processing control on the Command Center.
2. Ensure the latex primer and control are within the correct temperature range. For COULTER LATRON primer and control the correct temperature range is 18-30°C/64-86°F.
3. Verify the lot number of the primer and control. If you must use a new lot number, ensure that it has been set up properly.

CAUTION Possible system damage could occur if you aspirate anything except latex control or latex primer using this function. Do not aspirate any other materials with this function.

4. Go to the Diluter Keypad.
5. Press F 5 7 ENTER to aspirate LATEX primer and LATEX control for combined Diff and Retic test modes. The Diluter Keypad displays PRESS MANUAL OR CLEAR APERTURE.
6. Press CLEAR APERT. The Diluter Keypad displays PRESS MANUAL OR PRESENT SAMPLE.
7. Remove the cap of the latex primer vial.
8. Immerse the aspirator tip in the latex primer vial. The instrument automatically aspirates the primer. The Diluter Keypad displays DIFF+RETIC PRIMER while the instrument performs this function. When this function completes processing, the Diluter Keypad displays FUNCTION = 57.
9. Remove the vial from the aspirator tip when you hear a beep and the Analyzer Status line displays PREPARING SAMPLE. The probe cleaner retracts the aspirator and automatically cleans it.
10. At the Workstation, check the results from the primer.
11. If the results in the PRIMER column are less than or equal to 500, proceed to step 12. Otherwise, if the results in the PRIMER column are greater than 500:
    a. At the Diluter Keypad, press ENTER to reactivate the function for the control. The Diluter Keypad displays PRESS MANUAL OR CLEAR APERTURE.
    b. Perform steps 7 through 9 up to three more times.
    c. If you do not get a result below 500, cycle a new vial of primer.
    d. If you still do not get a result below 500, call your Coulter Representative.
12. At the Diluter Keypad, press ENTER to reactivate the function for the latex control. The Diluter Keypad displays PRESS MANUAL OR CLEAR APERTURE.

13. Gently mix the latex control according to the directions in the package insert.
14. Immerse the aspirator tip in the latex control vial. The instrument automatically aspirates the control. The Diluter Keypad displays LATEX—DIFF+RETIC while the instrument performs this function. When this function completes processing, the Diluter Keypad displays FUNCTION = 57.
15. At the Workstation, verify the results from the control.
16. At the Diluter Keypad, press STOP to exit this function. The Diluter Keypad displays READY.

Running Latex Control—Diff

1. Check the instrument processing control on the Command Center.
2. Ensure the latex primer and control are within the correct temperature range. For COULTER LATRON primer and control the correct temperature range is 18-30°C/64-86°F.
3. Verify the lot number of the primer and control. If you must use a new lot number, ensure that it has been set up properly. .

CAUTION Possible system damage could occur if you aspirate anything except latex control or latex primer using this function. Do not aspirate any other materials with this function.

4. Go to the Diluter Keypad.
5. Press F 5 5 ENTER to aspirate latex for the Diff test mode. The Diluter Keypad displays PRESS MANUAL OR CLEAR APERTURE.
6. Press CLEAR APERT. The Diluter Keypad displays PRESS MANUAL OR PRESENT SAMPLE.
7. Remove the cap of the latex primer vial.
8. Immerse the aspirator tip in the latex primer vial. The instrument automatically aspirates the primer. The Diluter Keypad displays DIFF PRIMER while the instrument performs this function. When this function completes processing, the Diluter Keypad displays FUNCTION = 55.
9. Remove the vial from the aspirator tip when you hear a beep and the Analyzer Status line displays PREPARING SAMPLE. The probe cleaner retracts the aspirator and automatically cleans it.
10. At the Workstation, check the results from the primer.
11. If the results in the PRIMER column are less than or equal to 500, proceed to step 12. Otherwise, if the results in the PRIMER column are greater than 500:
    a. At the Diluter Keypad, press ENTER to reactivate the function for the control. The Diluter Keypad displays PRESS MANUAL OR CLEAR APERTURE.
    b. Perform steps 7 through 9 up to three more times.
    c. If you do not get a result below 500, cycle a new vial of primer.
    d. If you still do not get a result below 500, call your Coulter Representative.

12. At the Diluter Keypad, press ENTER to reactivate the function for the latex control. The Diluter Keypad displays PRESS MANUAL OR CLEAR APERTURE.
13. Gently mix the latex control according to the directions in the package insert.
14. Immerse the aspirator tip in the latex control vial. The instrument automatically aspirates the control.

    The Diluter Keypad displays LATEX—DIFF while the instrument performs this function. When this function completes processing, the Diluter Keypad displays FUNCTION = 55.
15. At the Workstation, verify the results from the control.
16. At the Diluter Keypad, press STOP to exit this function. The Diluter Keypad displays READY.

Dispensing Diff Lytic Reagent Low Volume

1. Go to the Diluter Keypad.
2. Press F 2 3 ENTER to dispense Diff lytic reagent into the mixing chamber. The Diluter Keypad displays DIFF PAK LYSE LOW VOLUME while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 23. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Dispensing Diff Lytic Reagent High Volume

1. Go to the Diluter Keypad.
2. Press F 2 4 ENTER to dispense Diff lytic reagent into the mixing chamber. The Diluter Keypad displays DIFF PAK LYSE HIGH VOLUME while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 24. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Dispensing Diff Preservative Low Volume

1. Go to the Diluter Keypad.
2. Press F 2 1 ENTER to dispense WBC preservative into the mixing chamber. The Diluter Keypad displays DIFF PAK PRESERVE LV DISPENSE while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 21. Press ENTER to perform this function again.

3. Press STOP to exit this function. The Diluter Keypad displays READY.

Dispensing Diff Preservative High Volume

1. Go to the Diluter Keypad.
2. Press F 2 2 ENTER to dispense WBC preservative into the mixing chamber. The Diluter Keypad displays DIFF PRESERVE PAK HV DISPENSE while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 22. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Dispensing Diluent

1. Place an empty vial below the aspirator tip to collect the diluent you want to dispense.
2. Go to the Diluter Keypad.
3. Press F 0 4 ENTER to dispense 1 mL of diluent through the Manual aspiration mode aspirator tip. The Diluter Keypad displays DILUENT DISPENSE while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 04. Press ENTER to perform this function again.
4. Press STOP to exit this function. The Diluter Keypad displays READY.

Dispensing Diluent into RBC Bath

1. Go to the Diluter Keypad.
2. Press F 3 2 ENTER to activate the RBC dispenser to deliver diluent into the RBC bath. The Diluter Keypad displays RBC PUMP DISPENSE while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 32. Press ENTER to perform this function again.
3. Press STOP to exit this function. The RBC and WBC baths drain. The Diluter Keypad displays READY.

Dispensing Diluent into WBC Bath

1. Go to the Diluter Keypad.
2. Press F 3 3 ENTER to activate the WBC dispenser to deliver diluent into the WBC bath. The Diluter Keypad displays WBC PUMP DISPENSE while the instrument performs this function. When the function completes processing, the Diluter

Keypad displays FUNCTION = 33. Press ENTER to perform this function again.

3. Press STOP to exit this function. The RBC and WBC baths drain. The Diluter Keypad displays READY.

Performing Extended Prime

IMPORTANT Risk of misleading results. Make sure the baths are full before performing this procedure. If the baths are not full, you may need to prime again because bubbles could be in the line.

1. Go to the Diluter Keypad.
2. Press F 1 1 ENTER to pull fluid through the apertures to the vacuum isolator chamber for 60 seconds. The Diluter Keypad displays EXTENDED PRIME while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 11. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Performing Extended Clear

1. Go to the Diluter Keypad.
2. Press F 1 2 ENTER to apply 5-psi pressure to the rear of the apertures for 60 seconds. The Diluter Keypad displays EXTENDED CLEAR while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 12. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Clearing Flow Cell (Level 1)

CAUTION Risk of system damage. This function places stress on the flow cell. Excessive use of this function can damage your instrument. Use this procedure **only** if other functions fail to remove the clog and **never** more than specifically instructed to do so by your Coulter product information or Coulter Representative.

1. Go to the Diluter Keypad.
2. Press F 4 4 ENTER to
   - Purge the flow cell with cleaning agent
   - Turn on the flow cell aperture current
   - Apply low pressure to the flow cell
   - Alternately apply vacuum

- Check the flow cell for a clog
- Leave diluent in the flow cell.

The Diluter Keypad displays FLOWCELL UNCLOG 1 while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 44. Press ENTER to perform this function again.

3. Press STOP to exit this function. The Diluter Keypad displays READY.

Clearing Flow Cell (Level 2)

CAUTION Risk of system damage. This function places stress on the flow cell. Excessive use of this function can damage your instrument. Use this procedure **only** if other functions fail to remove the clog and **never** more than specifically instructed to do so by your Coulter product information or Coulter Representative.

1. Go to the Diluter Keypad.
2. Press F 4 5 ENTER to
   - Purge the flow cell with cleaning agent
   - Turn on the flow cell aperture current
   - Apply 30 psi to top of the flow cell
   - Alternately apply vacuum
   - Check the flow cell for a clog
   - Leave diluent in the flow cell.

   The Diluter Keypad displays FLOWCELL UNCLOG 2 while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 45. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Clearing Flow Cell (Level 3)

CAUTION Risk of system damage. This function places greater stress on the flow cell than do other functions, and it may damage your instrument. Use this procedure **only** if the other functions fail to remove the clog and **never** more than once unless specifically instructed to do so by your Coulter Representative.

1. Go to the Diluter Keypad.
2. Press F 4 6 ENTER to
   - Purge the flow cell with cleaning agent
   - Turn on the flow cell aperture current
   - Apply low pressure to the flow cell
   - Alternately apply vacuum

- Leave cleaning agent in the flow cell.

The Diluter Keypad displays FLOWCELL UNCLOG 3 while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 46. Press ENTER to perform this function again, only on the advice of your Coulter Representative.

3. Press STOP to exit this function. The Diluter Keypad displays READY.
4. Use F44 before analyzing samples to clear any remaining cleaning agent from the flow cell.

Performing Keypad Key Test

1. Go to the Diluter Keypad.
2. Press F 9 8 ENTER to test whether each key on the keypad is operating properly. The Diluter Keypad displays KEYBOARD TEST.
3. Press any key on the Diluter Keypad. The Diluter Keypad displays the name of the key pressed. If the key fails to appear on the keypad, contact your Coulter Representative.
4. Press STOP twice to stop the keypad test. The Diluter Keypad displays FUNCTION = 98. Press ENTER to perform this function again.
5. Press STOP to exit this function. The Diluter Keypad displays READY.

Priming CBC Lytic Reagent

1. Go to the Diluter Keypad.
2. Press F 0 2 ENTER to prime CBC lytic reagent lines. The following sequence occurs twice:
   - Drains both baths
   - Dispenses CBC lytic reagent into the WBC bath two times
   - Drains WBC bath and the cycle repeats
   - Fills both baths with diluent
   - Primes apertures.

   The Diluter Keypad displays PRIME CBC LYSE while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 02. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Priming Cleaning Agent

1. Go to the Diluter Keypad.
2. Press F 1 7 ENTER to prime cleaning agent lines. The Diluter keypad displays PRIME CLEANER while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 17. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Priming Diff Lytic Reagent

1. Go to the Diluter Keypad.
2. Press F 1 4 ENTER to prime the Diff lytic reagent lines. The instrument:
   - Dispenses Diff lytic reagent into the mixing chamber
   - Drains the mixing chamber.

   The Diluter Keypad displays PRIME DIFF LYSE while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 14. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Priming Diff Preservative

1. Go to the Diluter Keypad.
2. Dispense preservative into the mixing chamber.
3. Drain preservative from the mixing chamber. The Diluter Keypad displays PRIME DIFF PRESERVE while the instrument performs this function.

   Note: This function takes approximately 2 minutes.

   When the function completes processing, the Diluter Keypad displays FUNCTION = 15. Press ENTER to perform this function again.
4. Press STOP to exit this function. The Diluter Keypad displays READY.

Priming Diluent

1. Go to the Diluter Keypad.
2. Press F 1 6 ENTER to prime the diluent lines. The Diluter Keypad displays PRIME DILUENT while the instrument performs this function.

   Note: This function takes approximately 2 minutes.

When the function completes processing, the Diluter Keypad displays FUNCTION = 16.

Press ENTER to perform this function again.

3. Press STOP to exit this function. The Diluter Keypad displays READY.

Priming Retic Clearing Solution

1. Go to the Diluter Keypad.
2. Press F 1 9 ENTER to prime Retic clearing solution reagent lines. The instrument:
    - Dispenses Retic clearing solution to the Retic chamber
    - Drains the Retic chamber to the waste chamber.

    The Diluter Keypad displays PRIME RETIC CLEAR while the instrument performs this function.

    Note: This function takes approximately 1 minute.

    When the function completes processing, the Diluter Keypad displays FUNCTION = 19.

    Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Priming Retic Stain Solution

1. Go to the Diluter Keypad.
2. Press F 1 8 ENTER to prime the Retic stain lines. The instrument:
    - Dispenses Retic stain to the Retic chamber
    - Drains the Retic chamber into the waste chamber.

    The Diluter Keypad displays PRIME RETIC STAIN while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 18. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Priming Sweep Flow

1. Go to the Diluter Keypad.
2. Press F 0 8 ENTER to prime the sweep-flow lines with diluent. The Diluter Keypad displays PRIME SWEEP FLOW while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 08.

3. Watch for three steady streams of droplets from the RBC bath to the vacuum isolator chamber. If the droplets fail to appear, press ENTER to perform this function again.
4. Press STOP to exit this function. The Diluter Keypad displays READY.

Performing Probe Wipe Test

1. Go to the Diluter Keypad.
2. Press F 2 8 ENTER to check the operation of the automatic probe wipe. The Diluter Keypad displays CHECKING PROBE WIPE while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 28. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Performing Flow Cell Purge

1. Go to the Diluter Keypad.
2. Press F 1 3 ENTER to clear air bubbles or debris from the flow cell. The Diluter Keypad displays PURGE MODE while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 13. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Forcing Mixing Bubbles into Baths

1. Go to the Diluter Keypad.
2. Press F 0 3 ENTER to force mixing bubbles into the RBC and WBC baths. The Diluter Keypad displays RBC & WBC MIX while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 03. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Releasing Blood Sampling Valve (BSV)

1. Go to the Diluter Keypad.
2. Press F 0 6 ENTER to:
    - Release pressure from the BSV

- Drain the baths
- Rotate the BSV back and forth five times
- Bleed off pressure.

The Diluter Keypad displays RELEASE B.S.V. while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 06. Press ENTER to perform this function again.

3. Press STOP to exit this function. The Diluter Keypad displays READY.

Refilling the Reagent Reservoirs

1. Go to the Diluter Keypad.
2. Press F 3 1 ENTER to prime the reagent reservoirs. The Diluter Keypad displays PRIME RESERVOIRS while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 31. Press ENTER to perform this function again.

   Note: If the reservoirs are already primed, RESERVOIRS FULL PRESS ALARM RESET appears on the Diluter Keypad. Press ALARM RESET and FUNCTION = 31 displays on the Diluter Keypad.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Running Latex Control—Retic

1. Check the instrument processing control on the Command Center.
2. Ensure the latex primer and control are within the correct temperature range. For COULTER LATRON primer and control the correct temperature range is 18-30°C/64-86°F.
3. Verify the lot number of the primer and control. If you must use a new lot number, ensure that it has been set up properly.

CAUTION Possible system damage could occur if you aspirate anything except latex control or latex primer using this function. Do not aspirate any other materials with this function.

4. Go to the Diluter Keypad.
5. Press F 5 6 ENTER to aspirate latex for Retic test mode. The Diluter Keypad displays PRESS MANUAL OR CLEAR APERTURE.
6. Press CLEAR APERT. The Diluter Keypad displays PRESS MANUAL OR PRESENT SAMPLE.
7. Remove the cap of the latex primer vial.
8. Immerse the aspirator tip in the latex primer vial. The instrument automatically aspirates the primer. The Diluter Keypad displays RETIC PRIMER while the instrument performs

this function. When this function completes processing, the Diluter Keypad displays FUNCTION = 56.

9. Remove the vial from the aspirator tip when you hear a beep and the Analyzer Status line displays PREPARING SAMPLE. The probe cleaner retracts the aspirator and automatically cleans it.
10. At the Workstation, check the results from the primer.
11. If the results in the PRIMER column are less than or equal to 500, proceed to step 12. Otherwise, if the results in the PRIMER column are greater than 500:

    a. At the Diluter Keypad, press ENTER to reactivate the function for the control. The Diluter Keypad displays PRESS MANUAL OR CLEAR APERTURE.

    b. Perform steps 7 through 9 up to three more times.

    c. If you do not get a result below 500, cycle a new vial of primer.

    d. If you still do not get a result below 500, call your Coulter Representative.

12. At the Diluter Keypad, press ENTER to reactivate the function for the latex control. The Diluter Keypad displays PRESS MANUAL OR CLEAR APERTURE.
13. Gently mix the latex control according to the directions in the package insert.
14. Immerse the aspirator tip in the latex control vial. The instrument automatically aspirates the control. The Diluter Keypad displays LATEX—RETIC while the instrument performs this function. When this function completes processing, the Diluter Keypad displays FUNCTION = 56.
15. At the Workstation, verify the results from the control.
16. At the Diluter Keypad, press STOP to exit this function. The Diluter Keypad displays READY.

Dispensing Retic Stain

1. Go to the Diluter Keypad.
2. Press F 2 5 ENTER to dispense Retic stain into the mixing chamber. The Diluter Keypad displays RETIC PAK STAIN while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 25.

   Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Dispensing Retic Clearing Solution

1. Go to the Diluter Keypad.
2. Press F 2 6 ENTER to dispense Retic clearing solution into the mixing chamber. The Diluter Keypad displays RETIC PAK CLEAR while the instrument performs this function. When the function completes processing, the Diluter Keypad

displays FUNCTION = 26. Press ENTER to perform this function again.

3. Press STOP to exit this function. The Diluter Keypad displays READY.

Performing Sheath Tank Check

1. Go to the Diluter Keypad.
2. Press F 2 0 ENTER to:
   - Fill sheath tank
   - Drain sheath tank
   - Check sheath tank level.

   The Diluter Keypad displays SHEATH TANK CHECK while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 20. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Freeing Solenoids

1. Go to the Diluter Keypad.
2. Press F 9 5 ENTER to release pressure on all the solenoids. The Diluter Keypad displays SOLENOIDS FREE while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 95. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Enabling/Disabling Access to Cycle Control

1. Go to the Diluter Keypad.
2. Press F 9 9 ENTER to enable or disable access to cycle control. The Diluter Keypad displays WAIT ENABLED or WAIT DISABLED. Press STOP and the Diluter Keypad displays FUNCTION = 99. Press ENTER to perform this function again.
3. Press STOP twice to exit this function. The Diluter Keypad displays READY.

Perform an Initial Prime of Diluter

1. Go to the Diluter Keypad.

2. Press F 6 7 ENTER to perform an initial prime of the Diluter. The Diluter Keypad displays DILUTER PRIME while the instrument performs this function. When the function completes processing, the Diluter Keypad displays FUNCTION = 67. Press ENTER to perform this function again.
3. Press STOP to exit this function. The Diluter Keypad displays READY.

Flushing System

1. Prepare 750 mL of bleach solution in a container.
2. Place the reagent line labeled DISINFECT into the bleach container.
3. Go to the Diluter Keypad.
4. Press F 4 0 ENTER to decontaminate Diluter lines that are exposed to blood. The Diluter Keypad displays SYSTEM FLUSH while the instrument performs this function. This takes approximately 5 minutes. When the function completes processing, the Diluter Keypad displays FUNCTION = 40.

CAUTION System damage could occur if you leave the bleach solution for more than 00:15:00 (HR MIN SEC). Remove the bleach solution immediately after the system flush completes processing.

5. Remove the reagent line from the bleach container and place it in a 750 mL container of distilled water.
6. Press ENTER to remove the bleach solution. The Diluter Keypad displays SYSTEM FLUSH while the instrument performs this function. This takes approximately 5 minutes. When the function completes processing, the Diluter Keypad displays FUNCTION = 40.
7. Press STOP twice to exit this function. The Diluter Keypad displays READY.
8. Press SHUT DOWN.
9. Perform daily startup.

Monitoring Low Vacuum

1. Go to the Diluter Keypad.
2. Press F 9 2 ENTER to monitor low vacuum. The Diluter Keypad displays X.XXXX, where X.XXXX is the current vacuum level. The vacuum level may appear to change slightly while you view it on the Diluter Keypad. This is normal.
3. Use the vacuum regulator to adjust the level to 6 ±0.010 inches Hg. Left increases. Right decreases.

4. Press STOP twice to exit this function. The Diluter Keypad displays READY.

Advancing the Tube

1. Place a cassette containing tubes in each cassette position on the rocker bed to the right of the tube detector.
2. Go to the Diluter Keypad.
3. Press F 9 6 ENTER to move the cassette through the piercing station one tube position at a time. The Diluter Keypad displays TUBE ADVANCE while the instrument performs this function.
4. Press STOP to stop the tube advance. The Diluter Keypad displays FUNCTION = 96. To perform this function again, place the cassette on the rocker bed to the right of the tube detector and press ENTER.
5. Press STOP to exit this function. The Diluter Keypad displays READY.
6. Remove the cassette from the rocker bed.

Zap Apertures Function

1. Go to the Diluter Keypad.
2. Press F 0 9 ENTER to:
   - Apply pressure behind the baths
   - Drain and rinse the baths four times with cleaning agent
   - Draw cleaning agent behind the apertures
   - Zap the apertures 10 times to remove protein or debris from the apertures.

   The Diluter Keypad displays ZAP APERTURES while the instrument performs this function. When the function completes processing, the Diluter Keypad displays PRESS 0 / 1 FOR RINSE / REPEAT ZAP.
3. Press:
   - 0 To rinse with cleaning agent. The Diluter Keypad displays RINSE CLENZ.
   - 1 To repeat the zap aperture function. The Diluter Keypad displays REPEAT ZAPPING.
4. Press STOP to exit this function. The Diluter Keypad displays READY.

Zapping Apertures

1. Ensure pneumatics are on.

2. Use F 0 9 ENTER. to zap the apertures.
3. Press START UP to purge the system of cleaning agent.
4. Prime the system by cycling whole blood in Automatic aspiration mode.
5. Run a control in CBC test mode.
6. Verify your control results are acceptable. If they are unacceptable, bleach the apertures.

5.3 SOLENOID FUNCTIONS

Table 5.1 Solenoid Functions

Solenoid	Function	Valves
SL1	Rinse needle	
SL2	Backwash probe	
SL3	CBC lytic reagent pump	VL3
SL4	Hgb drain valve	VL4, VL4V, VL4C
SL5	Backwash pressure	
SL6	Hgb and waste drain	VL6
SL7	WBC dispense	VL7
SL8	RBC dispense	VL8
SL9	Whole blood aspiration	VL9A, VL9B
SL10	WBC count	VL10
SL11	RBC count	VL11
SL12	Bath drain	VL12A, VL12B, VL12C, VL12D, VL12E, VL12F
SL13	Probe/Needle drain	VL13
SL14	Cleaning agent	VL14A, VL14B
SL15	Sample valve return	
SL16	Vacuum isolator drain	VL16
SL17	Segment sample	VL17
SL18	Hgb blank dispense	
SL19	RBC sample mix	
SL20	WBC sample mix	
SL21	Right lift	
SL22	Left lift	
SL23	Needle interlock	
SL24	Release Manual probe (in)	
SL25	Tube ram/needle bellow	VL25
SL26	Bar-code reader	VL26

Table 5.1 Solenoid Functions *(Continued)*

Solenoid	Function	Valves
SL27	Backward bed rock	
SL28	Release bed lock	
SL29	Stripper plate	
SL30	Forward bed rock	
SL31	Flipper retract	
SL33	Needle vent vacuum	VL33
SL34	Release Manual probe out	
SL36	Belt advance	
SL37	Needle bellow up	
SL39	Vacuum overflow dump	VL39
SL40	Stop vacuum	VL40
SL41	Reverse flush	VL41
SL42	Rinse - Diff	
SL43	Diff lytic reagent	
SL44	Sample disable - Retics	VL44
SL45	Diff preservative	VL45
SL46	Flush	VL46A, VL46B
SL47	Cleaning agent pump	VL47A, VL47B
SL48	Diff mixing chamber drain	VL48A, VL48B
SL49	Exit flow cell	VL49A, VL49B
SL50	Latex deliver	VL50
SL51	Sample pressure - Diff	VL51
SL52	Sample disable - Diff	VL52
SL53	Waste - Diff/Retic	
SL54	Sheath flow	VL54
SL55	Forward flush	VL55
SL56	Latex delivery - Retics	VL56
SL57	Probe/bellow drain vacuum	VL57A, VL57B
SL58	Aspirate enable and lytic reagent disable	VL58A, VL58B
SL59	Backwash disable	VL59
SL60	Diff preservative enable	
SL61	Turbo drain	
SL62	Aspirate enable and stain disable	VL62A, VL62B
SL63	Diff lytic reagent enable	
SL64	Diff and Retic segment	VL64

Table 5.1 Solenoid Functions *(Continued)*

Solenoid	Function	Valves
SL65	Diff lytic reagent disable	VL65
SL67	Vent chamber drain	VL67
SL68	Backwash needle/segments	
SL69	Backwash flow cell	
SL75	Rinse Retic chamber	
SL76	Sample pressure - Retics	VL76
SL80	Retic chamber drain	VL80A, VL80B
SL82	Diff lytic reagent volume - low	
SL88	Latex enable Retics	VL88
SL89	Blood/stain to stain chamber	VL89
SL92	Blood/stain aspiration pump	
SL93	5 psi to stain chamber	VL93A, VL93B
SL94	Segment blood/stain	VL94A, VL94B
SL95	Toggle waste/Retic chamber	VL95A, VL95B
SL96	Rinse stain chamber	
SL97	Drain stain chamber	VL97A, VL97B
SL98	Ghost pump	LV98
SL99	Stain pump	VL99
SL100	Diluent level refill	
SL101	Cleaning agent level refill	
SL102	Diff lytic reagent level refill	
SL103	Diff preservative level refill	
SL104	Stain level refill	
SL105	Ghost level refill	
SL106	Lytic reagent level refill	
SL107	Backwash tank refill	VL107A, VL107B
SL108	Sheath tank refill	VL108
SL110	Probe wipe rinse	
SL111	Probe wipe vacuum	VL111
SL112	Disinfectant	VL112
SL113	Reservoir vent	VL113

5.4 RUNNING BACKGROUND TEST

The Background test includes Hgb voltage check, Diff test, and Retic test.

1. Go to the Analyzer screen.
2. Press MAIN MENU.

3. Press ANALYZER FUNCTIONS.
4. Press START UP TESTS.
5. Press BACKGROUND TEST. The Analyzer screen displays a SYSTEM RUN screen that shows pulses. After showing the pulses, the Analyzer displays the START UP TESTS screen and transmits the test results to the Workstation. The Analyzer screen then returns to the SYSTEM RUN screen.
6. Review the results at the Workstation. If results are unacceptable, rerun the background test. If the results are unacceptable on the second try, call your Coulter Representative.
7. If background test results are acceptable, begin running samples or press MAIN MENU to display the Analyzer MAIN MENU screen.

5.5 RUNNING PRECISION TEST

1. Go to the Analyzer screen.
2. Press MAIN MENU.
3. Press ANALYZER FUNCTIONS.
4. Press START UP TESTS
5. Press PRECISION TEST. The Analyzer screen displays a SYSTEM RUN screen that shows pulses. After showing the pulses, the Analyzer displays the START UP TESTS screen and transmits the test results to the Workstation.
6. Review the results at the Workstation. If results are unacceptable, rerun the precision test. If the results are unacceptable on the second try, call your Coulter Representative.
7. If precision test results are acceptable, press one of the following:

MAIN MENU	To display the Analyzer MAIN MENU screen.
SYSTEM RUN	To cycle samples.
RETURN	To display the ANALYZER FUNCTIONS screen.

5.6 RUNNING RAMP TEST

1. Go to the Analyzer screen.
2. Press MAIN MENU.
3. Press ANALYZER FUNCTIONS.
4. Press START UP TESTS.
5. Press RAMP TEST. The Analyzer screen displays a SYSTEM RUN screen that shows pulses. After showing the pulses, the Analyzer displays the START UP TESTS screen and transmits the test results to the Workstation.
6. Review the results at the Workstation. If results are unacceptable, rerun the ramp test. If the results are unacceptable on the second try, call your Coulter Representative.
7. If ramp test results are acceptable, press one of the following:

MAIN MENU	To display the Analyzer MAIN MENU screen.
SYSTEM RUN	To cycle samples.
RETURN	To display the ANALYZER FUNCTIONS screen.

5.7 READING HGB VOLTAGE FOR LAST CYCLE

1. Go to the Analyzer screen.
2. Press MAIN MENU.
3. Press ANALYZER FUNCTIONS.
4. Press HGB READINGS.

   The HGB READINGS screen appears with the Hgb-blank voltage and the Hgb-sample voltage for the last completed cycle.
5. Press one of the following:

MAIN MENU	To display the Analyzer MAIN MENU screen.
SYSTEM RUN	To cycle samples.
RETURN	To display the ANALYZER FUNCTIONS screen.

5.8 TRANSMITTING DATA FROM LAST CYCLE

1. Go to the Analyzer screen.
2. Press MAIN MENU.
3. Press ANALYZER FUNCTIONS.
4. Press TRANSMIT TO PC. The CBC results of the last sample are sent to the Workstation.
5. Press one of the following:

SYSTEM RUN	To cycle samples.
RETURN	To display the MAIN MENU screen.

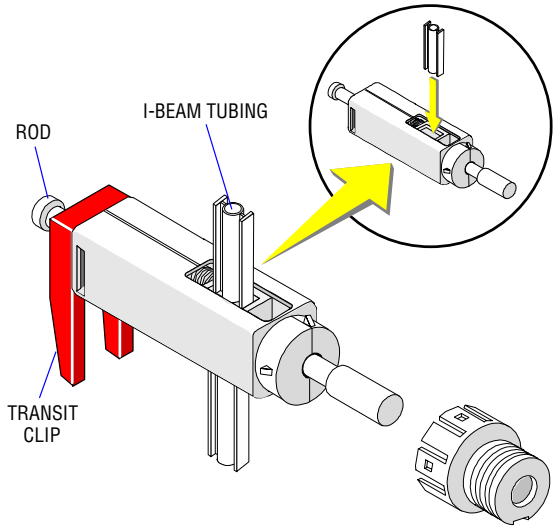
5.9 CHECKING THE NEEDLE

1. Cycle two samples:
   - One in Automatic aspiration mode (to check the sample flow to the BSV). While cycling the sample, ensure that blood passes through the BSV and makes its way to the aperture baths.
   - One in Manual aspiration mode (to check the sample flow from the BSV). While cycling the sample, ensure that blood makes its way to the aperture baths.
2. If blood does not appear in the aperture baths, open the Diluter lower cover.
3. Check the tubing from the needle to ensure it is not crimped or leaking.
4. If necessary, uncrimp or replace tubing.
5. Visually check the needle.
6. If the needle appears bent, replace the needle.

5.10 CHECKING PINCH VALVES

You can activate solenoids to check pinch valve functions.

IMPORTANT Incorrect results can occur if you pull tubing too far through the pinch valve and cause it to restrict flow from its attached fitting. Do not pull the tubing too far through the pinch valve, and make sure to check the attached fittings to ensure flow is not restricted. Incorrect results can also occur if you fail to thread the tubing properly. Make sure to properly thread the I-Beam tubing in the front and rear of the pinch valve.



1. Use a dental mirror to check tubing alignment.
2. If the tubing is crimped, use a red transit clip to hold the pinch valve open.
3. Pull the tubing a short distance through the pinch valve and squeeze it until the pinched area releases.
4. Remove the red transit clip.

Note: No red transit clips should be present on an operational system.

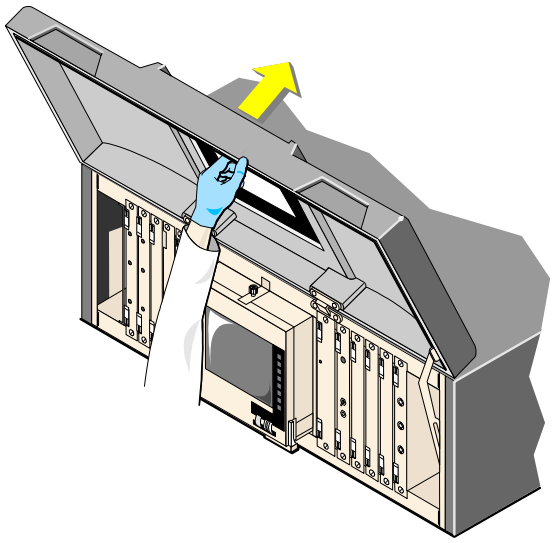
5.11 RESEATING AN ANALYZER CARD

1. Press POWER OFF.
2. Turn off the main breaker on the Power Supply.

WARNING Risk of personal injury. A shock hazard exists if the power cord is connected. Unplug the primary power cord before performing these procedures.

3. Disconnect the primary power cord.

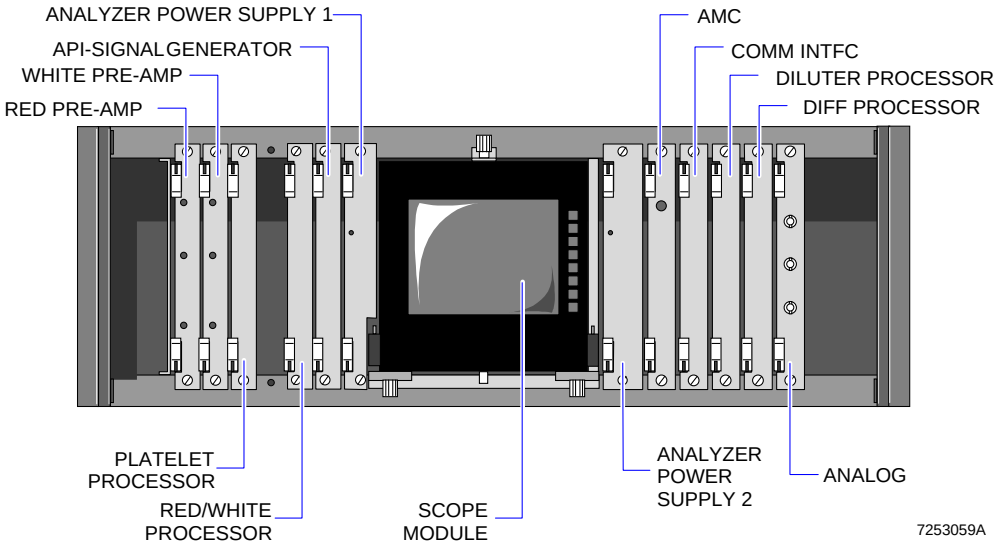
4. Open the Analyzer cover.



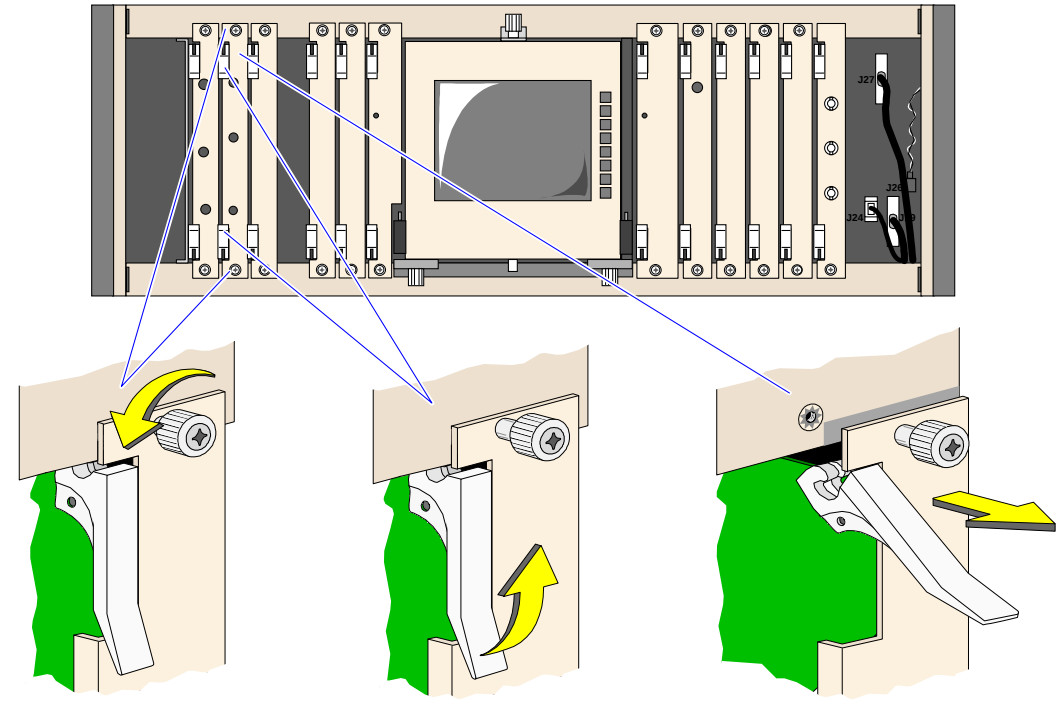
a. Lift the top cover forward and then upward until the side latch holds the cover open.

b. Several circuit cards appear behind the Analyzer cover. You should only open the Analyzer cover at the instruction of your Coulter Representative.

5. Locate the circuit card you want to reseat.



6. Loosen the thumbscrews on the upper and lower front edge of the circuit card.

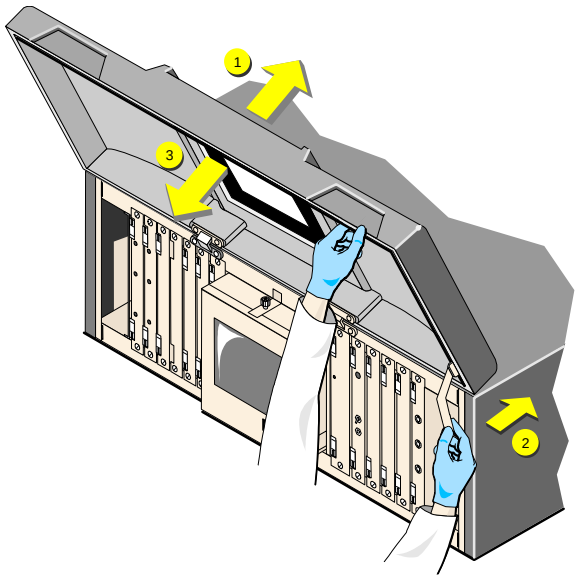


7. Extend the white tabs to push the card out of the connector.
8. Pull the card out.
9. Extend the white tabs to reseat the card.

CAUTION Installing the card into the wrong slot or misaligning the card with the connectors can damage the card or the instrument. Ensure the card is installed in the correct slot and is aligned with the connectors.

10. Align the card edges with the tracks for that card and push the card into the Analyzer.
11. Press the white tabs down to fully seat the card in the connector.
12. Tighten the thumbscrews.

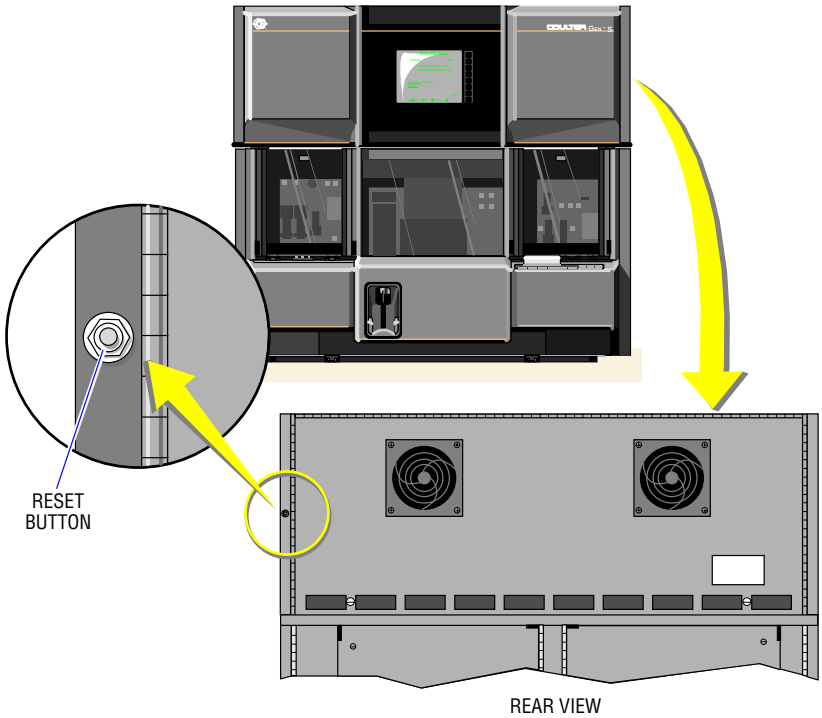
13. Close the Analyzer cover.



a. Lift the top cover upward to release tension on the side latch.
b. Push the side latch toward the back of the Analyzer to release it.
c. Lower the cover until it closes.

14. Reconnect the primary power cord.
15. Turn on the main breaker on the Power Supply.
16. Press START UP.

5.12 ANALYZER RESET BUTTON



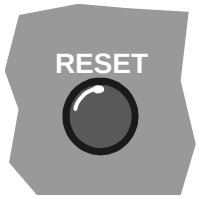
Press this button to reset the Analyzer. Resetting the Analyzer:

- Resets the electronic and pneumatic subsystems
- Causes the baths to drain and rinse and a backwash to occur
- Performs a memory test and senses the reagent and waste levels.

If used when the unit is not cycling, data from the last sample in the Analyzer memory is erased.

If used when the unit is cycling, any data in the Analyzer buffer that has not been transmitted to the Workstation is erased. The instrument also performs a cleanup cycle before returning to a READY state.

5.13 RESET BUTTON ON WORKSTATION



If this button appears on your Workstation, it is inactive. If you need to reset the Workstation, try to shut down the Workstation to avoid loss of any data. If you cannot shut down the Workstation, turn the Workstation off, wait 30 seconds and restart the Workstation.

5.14 WORKING WITH ELECTRONIC HISTORY LOGBOOKS

Select on the Command Center to access the History Log Viewer application.

The tabs on this window present an organized view of the logbook information stored in the database. The Workstation logs messages automatically whenever you perform startup or shutdown. It logs messages when you process key events, such as changing reagent information or calibrating. If the Workstation encounters a problem, it also logs the problem.

Each time maintenance or corrective actions are performed on an instrument, the person performing the actions can update the Maintenance log with text describing the maintenance or corrective action performed.

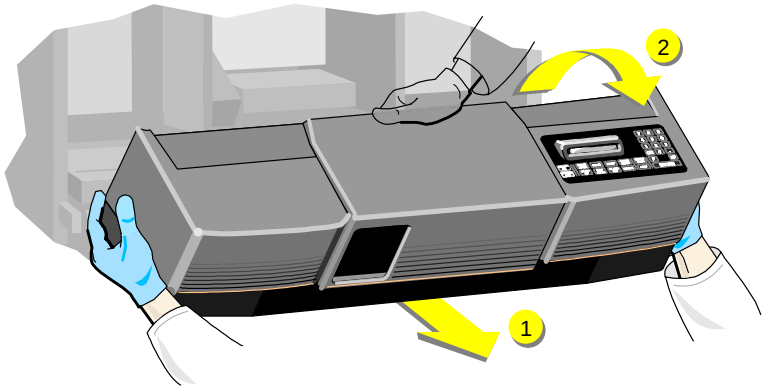
Each log presents identification information, such as the date and time a message was logged, and system messages. You can access detailed descriptions and corrective actions for system messages from the Message List.

The most current message appears at the bottom of the window. The logs store all messages until you delete them. Select old messages and then select to delete them.

You can add comments to a logbook to help describe a problem or a corrective action you have taken. The Workstation saves the comments in the database along with the specific message.

5.15 OPENING THE DILUTER COVER

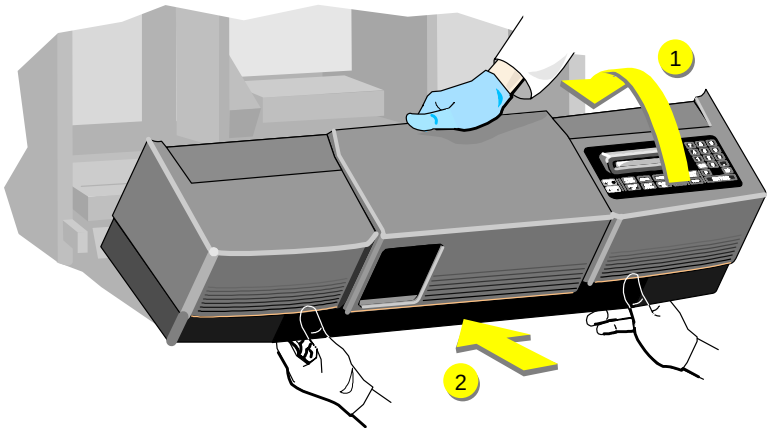
1. Place your hands on each side of the lower cover and pull it toward you.
2. Place your hand on top of the lower cover and pull it toward you, lowering it to a resting position.



If you open the lower cover during Automatic aspiration mode, the instrument stops processing samples and displays DOOR OPEN on the Diluter Keypad.

5.16 CLOSING THE COVER

1. Lift the cover upward.
2. Push the cover back toward the instrument.



6.1 SYSTEM AND WORKSTATION MESSAGES

The GEN•S System automatically monitors many of its activities and conditions and generates messages to alert the operator when the system does not respond as expected. Messages that apply to the GEN•S System are described in the tables in Heading 6.1; messages that apply to the Workstation only are described in the tables in Heading 6.2. All the messages are referenced in the index. Any messages that are logged at the Workstation appear in the following format: date, time, instrument name, operator name, message.

System Alarms

Many of the System error messages are accompanied by an alarm. To reset the alarm, press ALARM RESET on the Diluter keypad.

About Table 6.1, System Messages

The System messages, with their probable causes and corrective actions, are arranged alphabetically by Analyzer message.

Several System messages are listed with an "and" condition. For those messages:

- If the error occurs while the instrument is idle or ready to pierce, the Analyzer **only displays** the first message.
- If the error occurs while the instrument is running, the Analyzer displays the first message and then replaces it with the second message. The second message is always *Diluter Error* or *Non-Diluter Error.*

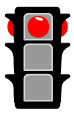
  To locate the appropriate corrective actions in the System Message tables for *Diluter Error* and *Non-Diluter Error* messages, use the message on the **Diluter screen**; it usually mirrors the original Analyzer message.

When a message column lists "current status" instead of a specific message, one of the following Analyzer status messages is displayed:

ACTIVE	*GEN•S INITIALIZING/RAW*	*READ HGB*
ANALYZE	*INTRO SAMPLE*	*READY*
ASPIRATE SAMPLE	*MANUAL MODE*	*RETICS BACKWASH*
AUTOCLEARING	*NOT READY*	*RETICS COUNT*
BACKWASH	*PERFORMING CLEANUP*	*RETICS PRIME*
CBC/DIFF PRIME	*PERFORMING RECOUNT*	*RINSE*
CHECKING PRESSURES	*PREPARING SAMPLE*	*SYSTEM FAULT*
COUNT	*PRIME*	*VERSION 1E/GENS*
COUNT COMPLETED	*RAW DATA DUMP*	*XMIT IN PROGRESS*
DATA ACCEPT		

Icons and Traffic Lights Displayed on the Workstation with System Messages

The Instrument icon is displayed on the Command Center when the GEN•S Instrument is halted.



A red traffic light is displayed on the Command Center when immediate action is required.

A yellow traffic light is displayed on the Command Center when caution is required. However, a red light supersedes a yellow light. (For example, if another condition occurs that triggers a red light, the red light is displayed until that condition is resolved, then the yellow light appears.

About Table 6.2, Workstation Messages

The Workstation messages, with their probable causes and corrective actions, are arranged alphabetically.

Not all Workstation messages are described in Table 6.2. Some messages appear from the Windows NT™ operating system and other software packages that are included on the Workstation. Because these messages may not be logged or have online help for them, you should write them down before contacting your Coulter Representative.

If the Workstation is connected to a network, some messages may be caused by the network configuration. If a local network administrator or Windows NT administrator is available, contact the administrator for help resolving the problem prior to calling your Coulter Representative.

Icons and Traffic Lights Displayed on the Workstation with Workstation Only Messages

The Patient icon is displayed on the Command Center when patient sample results are pending to be reviewed for validation in the review folder.

The Host Communication icon is displayed on the Command Center when sample transmissions are pending to be transmitted and the LIS/HIS is not responding.

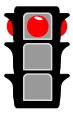
The XB icon is displayed on the Command Center when the last XB/XM batch is outside limits.

The QC icon is displayed on the Command Center when the last control run is outside limits.

The Printer icon is displayed on the Command Center when sample reports are pending to be printed and the Printer is not ready.

The Instrument icon is displayed on the Command Center when the GEN•S Instrument is halted.

The Database icon is displayed on the Command Center when database storage is not functional.



A red traffic light is displayed on the Command Center when immediate action is required.

A yellow traffic light is displayed on the Command Center when caution is required. However, a red light supersedes a yellow light. (For example, if another condition occurs that triggers a red light, the red light is displayed until that condition is resolved, then the yellow light appears).

6 TABLES OF SYSTEM MESSAGES

Table 6.0-1 System Messages - Symbols and Numbers

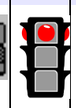
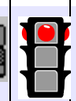
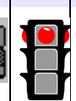
Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
5C Not Allowed In This Mode	*READY*	*READY*	No	Event Log *5C Control material used in Retic or SUBSET modes. Reset Analytical Station.*			Data not available.	N/A	Run stopped.	5C cell control material used in RETIC ONLY test mode.	1. Change the Analytical Station test mode to CBC or CBC/DIFF. 2. Process the control. 3. If message persists, call your Coulter Representative.
5 PSI Pressure High	*(current status)*	*5 PSI PRESSURE HIGH*	Yes	Event Log *5 PSI pressure too high. Adjust 5 PSI pressure. If pressure reading cannot be adjusted, call Coulter Customer Operations.*			Data displayed.	Combination of errors totaling 20/24 hours.	Beeps- operation continues.	5 psi regulator and/or transducer defective (pressure >5.2 psi).	1. Adjust 5 psi regulator to 5 ±0.1 psi. If you cannot adjust the 5 psi pressure reading, call your Coulter Representative. 2. Continue normal operation. If message recurs, call your Coulter Representative.
5 PSI Pressure Low	*READY*	*5 PSI PRESSURE LOW*	Yes	Event Log *5 PSI pressure too low. Adjust 5 PSI pressure. If pressure reading cannot be adjusted, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Run stopped.	5 psi regulator and/or transducer defective (pressure <4.8 psi) and/or line leaking.	1. Adjust 5 psi regulator to 5 ±0.1 psi. If you cannot adjust the 5 psi pressure reading, call your Coulter Representative. 2. Continue normal operation. If message recurs, call your Coulter Representative.
30 PSI Pressure High	*READY*	*30 PSI PRESSURE HIGH*	Yes	Event Log *30 PSI pressure too high. Adjust 30 PSI pressure. If pressure reading cannot be adjusted, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Run stopped.	30 psi regulator and/or transducer defective (pressure >31 psi).	1. Adjust 30 psi regulator to 30 ±0.2 psi. If you cannot adjust the 30 psi pressure reading, call your Coulter Representative. 2. Continue normal operation. If message recurs, call your Coulter Representative.
30 PSI Pressure Low	*READY*	*30 PSI PRESSURE LOW*	Yes	Event Log *30 PSI pressure too low. Adjust 30 PSI pressure. If pressure reading cannot be adjusted, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Run stopped.	30 psi regulator and/or transducer defective (pressure <29 psi) and/or line leaking.	1. Adjust 30 psi regulator to 30 ±0.2 psi. If you cannot adjust the 30 psi pressure reading, call your Coulter Representative. 2. Continue normal operation. If message recurs, call your Coulter Representative.
286 Board Communication Error	*NOT READY*	N/A	No	Event Log *AMC-DIFF communication failure: 286 board. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted.	20/24 hours	Stopped - inoperable.	DIFF PROCESSOR card communication problem.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

Table 6.0-2 System Messages - A

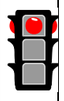
Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
AC Line Voltage Bad	*READY*	*AC LINE VOLTAGE BAD*	Yes	Event Log *AC line voltage below 90 Volt limit.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	N/A	Run stopped.	Ac line voltage <90 V limit.	1. Check the ac line voltage reading on the Power Supply. 2. If the voltage is <90 V, ensure the Power Supply is properly connected to the dedicated wall outlet. 3. If the Power Supply is properly connected, have the house maintenance person verify the wall outlet is supplying 90 to 264 Vac. 4. If the wall outlet is supplying 90 to 264 Vac, call your Coulter Representative and report your Analytical Station's current ac reading.
ACK Not Received By Diluter	*NOT READY*	*ACK NOT RECEIVED BY DILUTER*	Yes	Event Log *Communication error with AMC or interconnect. Reset Analytical Station.If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	N/A	Stopped - inoperable.	Communication error with AMC or interconnect.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Ambient Temp Sensor Bad	(current status)	AMBIENT TEMP SENSOR BAD	Yes	Event Log *Ambient temperature sensor defective or disconnected. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed.	5/24 hours	Idle - ready for request.	Faulty or disconnected sensor.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
AMC Did Not Reply	*NOT READY*	*AMC DID NOT REPLY*	Yes	Event Log *Diluter not receiving data from AMC. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	N/A	Stopped - inoperable.	Diluter not receiving data from AMC.	1. Reset the Analytical Station. 2. If message persists, reseat the AMC. 3. If message still persists, call your Coulter Representative.
AMC Never Sent Start Command	*NOT READY*	*AMC NEVER SENT START COMMAND*	Yes	Event Log *Communications error. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			N/A	N/A	Stopped - inoperable.	Communication error.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
AMC Requested Stop	(current status)	*AMC REQUESTED STOP*	No	Event Log *Analyzer Stopped. Reset Analytical Station. If message persists, perform flow cell unclog procedure.*			Data displayed if available (depends upon when error occurred).	5/24 hours	Paused until error resolved.	Analyzer needs to stop after an abnormal condition occurred (for example, clearing flow cell clogs).	1. Reset the Analytical Station. 2. If message persists, perform the flow cell unclog function (for example, F44, F45 or F46).

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Table 6.0-2 System Messages - A *(Continued)*

Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**		**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Analyzer +48V Bad	*NOT READY*	*ANALYZER +48V BAD*	Yes	Event Log *48 Volt power outside ±10% limit.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	+48 V power to Analyzer outside ±5% limit.	1. Reset the Analytical Station. 2. If message persists: a. Turn Power Supply MAIN POWER switch OFF for 5 minutes. b. Verify air filter is clean. c. Turn Power Supply MAIN POWER switch ON. 3. If message still persists, call your Coulter Representative.
Analyzer Error and *Non-Diluter Error*	*SYSTEM FAULT* *and* *NOT READY*	*ANALYZER ERROR*	Yes	Event Log *Communications error. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data displayed if available (depends upon when error occurred).	N/A	Stopped - inoperable.	Communication error.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Analyzer Fans Failed	(current status)	N/A	Yes	Event Log *Analyzer fans power supply defective. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	5/24 hours	Stopped - inoperable.	Analyzer fans power supply defective.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Aperture Voltage Lower Failed	(current status)	N/A	Yes	Event Log *Aperture voltage reading below limits. If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	If AutoStop/Flow Cell switch is OFF, run continues. If AutoStop/Flow Cell switch is ON, run is stopped at end of cycle.	Voltage reading <277 V (measured at the aperture) or <4.332 V (measured at the edge connector of the DIFF PROCESSOR card).	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Aperture Voltage Upper Failed	(current status)	N/A	Yes	Event Log *Aperture voltage reading above limits. If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		If AutoStop/Flow Cell switch is OFF, run continues. If AutoStop/Flow Cell switch is ON, run is stopped at end of cycle.	Voltage reading <322 V (measured at the aperture) or <5.045 V (measured at the edge connector of the DIFF PROCESSOR card).	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
ASCII Rec. Error	*NOT READY*	N/A	No	Event Log *AMC reported error - ASCII receive error. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data displayed if available (depends upon when error occurred).	N/A	Stopped - inoperable.	Communication error.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

Table 6.0-2 System Messages - A *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Aspiration -B-- and *Diluter Error*	(current status)	*ASPIRATION -B--*	Yes	Event Log *Front sensor detected air bubbles (<Tube ID>, <Cass/Pos>). Check sample volume and rerun.* Yellow traffic light is displayed for first two partial aspirations. Red traffic light is displayed for third partial aspiration.	 	 	• Data is displayed. • “P” appears in all parameter flag fields. • “System Alarm” message is printed in footer of sample report.	Combination of errors totaling 20/24 hours.	Automatic mode disabled after three consecutive aspiration errors. Manual mode operable.	Front sensor detected air bubbles.	1. Check the specimen and ensure: a. The volume was sufficient b. It does not contain clots or fibrin. c. It was collected and stored correctly. 2. If the message persists for three consecutive runs, reset the Analytical Station to continue running samples in the Automatic mode. **WARNING** Skin puncture from the needle, which could contain biohazardous material, can occur. Use extreme care when inspecting the needle area. 3. If the still message persists: a. Check the needle for plugs. b. Ensure the aspiration lines are clean. c. Troubleshoot the sample flow path for leaks, kinks or plugs. 4. If the message still persists, call your Coulter Representative. You can run samples in the Manual mode.
Aspiration ---C and *Diluter Error*	(current status)	*ASPIRATION ---C*	Yes	Event Log *Diluent front and rear sensors detected carryover (<Tube ID>, <Cass/Pos>). Rerun sample.* Yellow traffic light displayed for first two partial aspirations. Red traffic light displayed for third partial aspiration.	 	 	• Data is displayed. • “P” appears in all parameter flag fields. • “System Alarm” message is printed in footer of sample report.		Automatic mode disabled after three consecutive aspiration errors. Manual mode operable.	Diluent front and rear sensors detected carryover.	1. Check the specimen and ensure: a. The volume was sufficient b. It does not contain clots or fibrin. c. It was collected and stored correctly. 2. If the message persists for three consecutive runs, reset the Analytical Station to continue running samples in the Automatic mode. **WARNING** Skin puncture from the needle, which could contain biohazardous material, can occur. Use extreme care when inspecting the needle area. 3. If the still message persists: a. Check the needle for plugs. b. Ensure the aspiration lines are clean. c. Troubleshoot the sample flow path for leaks, kinks or plugs. 4. If the message still persists, call your Coulter Representative. You can run samples in the Manual mode.

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Table 6.0-2 System Messages - A *(Continued)*

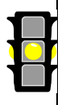
Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Aspiration N--- and *Diluter Error*	(current status)	*ASPIRATION N---*	Yes	Event Log *Sensor detected diluted blood or non-blood sample (<Tube ID>, <Cass/Pos>). Check sample and rerun.* Yellow traffic light displayed for first two partial aspirations. Red traffic light displayed for third partial aspiration.			• Data is displayed. • "P" appears in all parameter flag fields. • "System Alarm" message is printed in footer of sample report.		Automatic mode disabled after three consecutive aspiration errors. Manual mode operable.	Sensor detected preset blood threshold failure due to excessive diluted blood or non-blood sample.	1. Check the specimen and ensure: a. The volume was sufficient b. It does not contain clots or fibrin. c. It was collected and stored correctly. 2. If the message persists for three consecutive runs, reset the Analytical Station to continue running samples in the Automatic mode. **WARNING** Skin puncture from the needle, which could contain biohazardous material, can occur. Use extreme care when inspecting the needle area. 3. If the still message persists: a. Check the needle for plugs. b. Ensure the aspiration lines are clean. c. Troubleshoot the sample flow path for leaks, kinks or plugs. 4. If the message still persists, call your Coulter Representative. You can run samples in the Manual mode.
Aspiration --P- and *Diluter Error*	(current status)	*ASPIRATION --P-*	Yes	Event Log *Blood front and rear sensors detected partial aspiration (<Tube ID>, <Cass/Pos>). Check sample for sufficient volume, check needle for clogs and rerun sample.* Yellow traffic light displayed for first two partial aspirations. Red traffic light displayed for third partial aspiration.			• Data is displayed. • "P" appears in all parameter flag fields. • "System Alarm" message is printed in footer of sample report.		Automatic mode disabled after three consecutive aspiration errors. Manual mode operable.	Blood front and rear sensors detected partial aspiration or diluted blood.	1. Check the specimen and ensure: a. The volume was sufficient b. It does not contain clots or fibrin. c. It was collected and stored correctly. 2. If the message persists for three consecutive runs, reset the Analytical Station to continue running samples in the Automatic mode. **WARNING** Skin puncture from the needle, which could contain biohazardous material, can occur. Use extreme care when inspecting the needle area. 3. If the still message persists: a. Check the needle for plugs. b. Ensure the aspiration lines are clean. c. Troubleshoot the sample flow path for leaks, kinks or plugs. 4. If the message still persists, call your Coulter Representative. You can run samples in the Manual mode.

Table 6.0-2 System Messages - A *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Aspiration Timeout .	*NOT READY*	*ASPIRATION TIMEOUT*	Yes	Event Log *Aspiration timeout. reset Analytical Station To run samples in Automatic sampling mode or run samples in Manual Sampling mode.*			Data not transmitted or data transmitted to GEN•S Workstation but flagged (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Diluter did not receive message from Analyzer within 5 seconds of being ready to pierce in Automatic mode.	1. Reset the Analytical Station and try to rerun samples in the Automatic mode. 2. If error recurs, run sample in Manual mode.
Automatic Mode Disabled	*MANUAL MODE*	*AUTOMATIC MODE DISABLED*	Yes	Event Log *Automatic sampling mode disabled. Check previous messages (<Tube ID>, <Cass/Pos>).*			Data displayed if available (depends upon when error occurred).	20/24 hours	Automatic mode disabled; Manual mode operable.	Automatic mode error not resolved.	1. Check the event history log for previous messages that may affect the Automatic mode. 2. Correct the problems. 3. Reset the Analytical Station. 4. If unable to correct the problem, or if the message recurs, call your Coulter Representative. You can run samples in the Manual mode.

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Table 6.0-3 System Messages - B

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Backwash Tank Not Full and *Non-Diluter Error*	*SYSTEM FAULT* and *NOT READY*	*BACKWASH TANK NOT FULL*	Yes	Event Log *Diluent level low or faulty backwash tank float sensor. Check diluent container and restart Analytical Station.*			Data displayed if available (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	Stopped - inoperable.	Diluent level low or faulty float and/or sensor.	1. Check diluent container for sufficient volume and replace if necessary. 2. Reset the Analytical Station. 3. If volume of diluent is adequate or if message recurs: a. Use F30 to check operation of the backwash tank. b. Check for leaks and kinks in the tubing around the backwash tank. 4. Continue operation. If message persists after resetting Analytical Station a maximum of three times, call your Coulter Representative.
Backwash Tank Still Full and *Non-Diluter Error*	*SYSTEM FAULT* and *NOT READY*	*BACKWASH TANK STILL FULL*	Yes	Event Log *Faulty backwash tank float sensor. Restart Analytical Station.*			Data displayed if available (depends upon when error occurred).		Stopped - inoperable.	Faulty float and/or sensor.	1. Reset the Analytical Station. 2. If message persists: a. Use F30 to check operation of the backwash tank. b. Check for leaks and kinks in the tubing around the backwash tank. 3. Continue normal operation. If message persists after resetting Analytical Station a maximum of three times, call your Coulter Representative.
Bed Not Advanced and *Diluter Error*	*SYSTEM FAULT* and *MANUAL MODE*	*BED NOT ADVANCED*	Yes	Event Log *Rocker bed did not advance. check belt tension or cassette position (<Tube ID>, <Cass/Pos>).*			Data displayed if available (depends upon when error occurred).	20/24 hours	Automatic mode disabled; Manual mode operable.	Obstruction in bed area or faulty sensor.	1. Ensure the rocker bed and belt are unobstructed. 2. Reposition the cassette. 3. Reset the Analytical Station. 4. Continue normal operation. If message persists, call your Coulter Representative. You can run samples in the Manual mode.
Bed Not Backward and *Diluter Error*	*SYSTEM FAULT* and *MANUAL MODE*	*BED NOT BACKWARD*	Yes	Event Log *Did not detect rocker bed backward position. Check for obstruction or defective sensor (<Tube ID>, <Cass/Pos>).*			Data displayed if available (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	Automatic mode disabled; Manual mode operable.	Obstruction in bed area or faulty sensor.	1. Ensure the rocker bed and belt are unobstructed. 2. Reposition the cassette. 3. Reset the Analytical Station. 4. Continue normal operation. If message persists, call your Coulter Representative. You can run samples in the Manual mode.
Bed Not Forward and *Diluter Error*	*SYSTEM FAULT* and *MANUAL MODE*	*BED NOT FORWARD*	Yes	Event Log *Did not detect rocker bed forward position. check for obstruction or defective sensor (<Tube ID>, <Cass/Pos>).*			Data displayed if available (depends upon when error occurred).		Automatic mode disabled; Manual mode operable.	Obstruction in bed area or faulty sensor.	1. Ensure the rocker bed and belt are unobstructed. 2. Reposition the cassette. 3. Reset the Analytical Station. 4. Continue normal operation. If message persists, call your Coulter Representative. You can run samples in the Manual mode.

Table 6.0-3 System Messages - B *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Bed Not Level and *Diluter Error*	*SYSTEM FAULT* and *MANUAL MODE*	*BED NOT LEVEL*	Yes	Event Log *Did not detect rocker bed horizontal position. Check for obstruction or defective sensor (<Tube ID>, <Cass/Pos>).*			Data displayed if available (depends upon when error occurred).		Automatic mode disabled; Manual mode operable.	Obstruction in bed area or faulty sensor.	1. Ensure the rocker bed and belt are unobstructed. 2. Reposition the cassette. 3. Reset the Analytical Station. 4. Continue normal operation. If message persists, call your Coulter Representative. You can run samples in the Manual mode.
Bellows Not Down and *Diluter Error*	*SYSTEM FAULT* and *MANUAL MODE*	*BELLOWS NOT DOWN*	Yes	Event Log *Bellows not down (<Tube ID>, <Cass/Pos>). If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Automatic mode disabled; Manual mode operable.	Obstruction in bellows pathway prevented bellows from moving down.	**WARNING** Skin puncture from the needle, which could contain biohazardous material, can occur. Use extreme care when inspecting the needle area. 1. Ensure the bellows pathway is unobstructed. 2. Reset the Analytical Station. 3. Continue normal operation. If message persists, check for leaks, kinks or plugs around the needle. 4. If message still persists, replace the needle. 5. If message still persists, call your Coulter Representative. You can run samples in the Manual mode.
Bellows Not Up and *Non-Diluter Error*	*SYSTEM FAULT* and *MANUAL MODE*	*BELLOWS NOT UP*	Yes	Event Log *Bellows not up. Needle not in safe position (<Tube ID>, <Cass/Pos>). If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Obstruction in bellows pathway prevented bellows from moving up.	**WARNING** Skin puncture from the needle, which could contain biohazardous material, can occur. Use extreme care when inspecting the needle area. 1. Ensure the bellows pathway is unobstructed. 2. Reset the Analytical Station. 3. If the message persists, call your Coulter Representative.

Table 6.0-4 System Messages - C

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Cassette Not Lowered Onto Bed	(current status)	*CASSETTE NOT LOWERED ONTO BED*	Yes	Event Log *Cassette not lowered onto bed. check right lift and rerun. If message persists, call Coulter Customer Operations.*			Data displayed.	20/24 hours	Run stopped.	Right lift or sensor defective.	1. Ensure the right lift is unobstructed. 2. Reposition the cassette. 3. Reset the Analytical Station. 4. If the message persists, call your Coulter Representative. You can place the cassette on the rocker bed and press **START/CONT** to continue running in the Automatic mode, or you can use the Manual mode.
CBC Bath Voltages Out Of Range	*NOT READY*	N/A	No	Event Log *Aperture voltage(s) out of range (<Tube ID>, <Cass/Pos>). If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and “System Alarm” message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Red and/or white aperture voltages outside range (135 to 175 Vdc for RBC aperture voltage and 100 to 150 Vdc for WBC aperture voltage). This could indicate: • The baths are out of diluent. • A preamp cable is loose. • The aperture voltages need to be recalibrated.	1. Open the Analyzer cover and ensure the six white preamp cables are properly connected to the two RED/WHITE PRE-AMP cards. 2. Close the Analyzer cover. 3. Reset the Analytical Station. While the Analytical Station resets, ensure the WBC and RBC baths drain and rinse correctly. 4. Continue operation. If the message persists, call your Coulter Representative and indicate the RBC and WBC aperture voltages need to be recalibrated.
CBC Xmit Failure	(current status)	N/A	No	N/A			N/A	N/A	Stopped - inoperable.	Analytical Station-to-Workstation transmission failure. This could indicate: • The Workstation is OFF. • The cables connecting the Analyzer and the Workstation are loose or disconnected. • A hardware or software malfunction.	1. Ensure the Workstation is on. If not, turn on the Workstation, log onto the Workstation and go to step 4. 2. Ensure the cables between the Analyzer and the Workstation are connected. If not, connect the cables and go to step 4. 3. If the Workstation is turned on, shutdown and restart it, then go to step 4. 4. Reset the Analytical Station. 5. Continue normal operation. If message persists, call your Coulter Representative.

Table 6.0-4 System Messages - C *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Check PC Status	*READY*	N/A	Yes	Event Log *AMC reported error - check PC status.*			Data not transmitted.	N/A	Run stopped.	Workstation not ready to process a sample.	1. Check the Workstation Command Center and the Event history log to determine what condition stopped the processing. If an Operator Alert window appears, select to acknowledge the stop condition. 2. Follow the procedure relevant for that condition to start the system processing again. 3. If you cannot determine the cause of the problem, reset the Workstation and the Analytical Station. 4. If the message persists or recurs, call your Coulter Representative.
Compressor +48V Bad	*READY*	*COMPRESSOR +48V BAD*	Yes	Event Log *48 Volt bulk or pneumatic Power Supply defective. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and “System Alarm” message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Short on +48 V output, Bulk Power Supply overheated, or Pneumatic Power Supply defective.	1. Turn the Power Supply MAIN POWER switch OFF for 5 minutes. 2. Verify air filter is clean. 3. Turn the Power Supply MAIN POWER switch ON. 4. If message persists, call your Coulter Representative.
Compressor Too Hot	*READY*	*COMPRESSOR TOO HOT*	Yes	Event Log *Pneumatics/Power Supply overheated or defective. Verify air filter is clean. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and “System Alarm” message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Overheated pneumatics and/or Pneumatic Power Supply defective (compressor shuts OFF when compressor temperature >80°C).	1. Turn the Power Supply MAIN POWER switch OFF for 5 minutes. 2. Verify air filter is clean. 3. Turn the Power Supply MAIN POWER switch ON. 4. If message persists, call your Coulter Representative.
CRC Error	*NOT READY*	*COMMON ROM AREA CRC ERROR*	Yes	Event Log *Faulty diluter memory. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			N/A	20/24 hours	Stopped - inoperable.	Incorrect or faulty Diluter PROM chip.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
CRC Error	*NOT READY*	*OVERLARY AREA CRC ERROR*	Yes	Event Log *Faulty diluter memory. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			N/A	20/24 hours	Stopped - inoperable.	Incorrect or faulty Diluter PROM chip.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

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Table 6.0-5 System Messages - D

Analytical Station				Workstation			System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**	**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Diagnostic Mode	*READY*	*DIAGNOSTIC MODE - TO RUN HIT RESET*	Yes	Event Log *Reagent level sense, pressure or voltage error detected. Reset Analytical Station. If message persists, call Coulter Customer Operations.*	N/A	5/24 hours	Analytical Station operation disabled (except for F-functions from Diluter keypad) until error is resolved.	Reagent level sense, pressure (5psi, 30 psi, high vacuum or low vacuum only), or voltage error detected at power up.	1. Resolve reagent level sense, pressure or voltage error. 2. Reset the Analytical Station. 3. If message persists, call your Coulter Representative.
Diff Heater Disabled	(current status)	*DIFF HEATER DISABLED*	Yes	Event Log *Diff heater disabled for current cycle. Heater temperature not within expected limits. Reset Analytical Station. If message persists, call Coulter Customer Operations.*	Data displayed.	20/24 hours	Idle - ready for request.	Temperature control failure.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Diff Heater Sensor Bad	(current status)	DIFF HEATER SENSOR BAD	Yes	Event Log *Diff heater defective or disconnected. Reset Analytical Station. If message persists, call Coulter Customer Operations.*	Data displayed.	20/24 hours	Idle - ready for request.	Faulty or disconnected sensor.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Diff Laser Offset Lower Failed	*READY*	N/A	Yes	Event Log *Laser offset too low. If message persists, call Coulter Customer Operations.*	Data displayed	N/A	Idle - ready for request.	Analytical Station not adjusted properly.	If message persists, call your Coulter Representative.
Diff Laser Offset Upper Failed	*READY*	N/A	Yes	Event Log *Laser offset too high. If message persists, call Coulter Customer Operations.*	Data displayed	N/A	Idle - ready for request.	Analytical Station not adjusted properly.	If message persists, call your Coulter Representative.
Diff PC Communication Failed	(current status)	N/A	Yes	Event Log *DIFF communication failure. Reset Analytical Station. If message persists, call Coulter Customer Operations.*	Data not transmitted.	20/24 hours	Stopped-inoperable	DIFF PROCESSOR card communication failure or Workstation did not respond.	1. Reset the Workstation and the Analytical Station. 2. Continue normal operation. If message recurs: a. Change the test mode to a non-Diff test and process non-Diff samples. b. Call your Coulter Representative.
Diff Pressure Lower Failed	(current status)	N/A	Yes One beep	Event Log *DIFF sample pressure below limit (<Tube ID>, <Cass/Pos>). If message persists, call Coulter Customer Operations.*	Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	If AutoStop/Flow Cell switch is OFF, run continues. If AutoStop/Flow Cell switch is ON, run is stopped at end of cycle.	Pressure reading <0.1 psi.	Continue normal operation. 1. If additional messages appear, follow corrective actions for those messages. 2. If this message recurs: a. Change the test mode to a non-Diff test and process non-Diff samples. b. Call your Coulter Representative.

Table 6.0-5 System Messages - D *(Continued)*

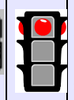
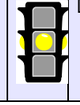
Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Diff Pressure Upper Failed	(current status)	N/A	Yes One beep	Event Log *DIFF sample pressure above limit (<Tube ID>, <Cass/Pos>). If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		If AutoStop/Flow Cell switch is OFF, run continues. If AutoStop/Flow Cell switch is ON, run is stopped at end of cycle.	Pressure reading >0.9 psi.	Continue normal operation. 1. If additional messages appear, follow corrective actions for those messages. 2. If this message recurs: a. Change the test mode to a non-Diff test and process non-Diff samples. b. Call your Coulter Representative.
Diff Processor Does Not Answer	(current status)	N/A	No	Event Log *DIFF processor communication failure. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			CBC only results displayed.	Combination of errors totaling 20/24 hours.	Operates only in CBC test mode.	DIFF PROCESSOR card failure or communication failure.	1. Reset the Analytical Station. 2. If message persists: a. Change the test mode to CBC Only and process CBC only samples. b. Call your Coulter Representative.
Diff Processor Out Of Synch.	(current status)	N/A	Yes	Event Log *DIFF processor communication failure. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).		Stopped - inoperable.	DIFF PROCESSOR card communication failure.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
DIFF PS Card +15 V Error Note: If event severe, this message may not appear.	(current status)	*DIFF PS CARD +15V ERROR*	Yes	Event Log *+15 Volts from Diff Power Supply outside limit. Power down/up Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	Combination of DIFF PS and DIL1 cards' voltage errors totaling 20/24 hours.	Stopped - inoperable.	U4 on the Diff Power Supply card failed (outside ±5% limit).	1. Power down the Analytical Station: a. On the Diluter keypad, press **POWER OFF**. b. At the Power Supply, turn off the MAIN POWER switch. 2. Power up the Analytical Station: a. Turn on the MAIN POWER switch. b. Press **POWER ON**. 3. If the message persists, call your Coulter Representative.
DIFF PS Card -15 V Error	(current status)	*DIFF PS CARD -15V ERROR*	Yes	Event Log *-15 Volts from diff Power Supply outside limit. Power down/up Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	U4 on the Diff Power Supply card failed (outside ±5% limit).	1. Power down the Analytical Station: a. On the Diluter keypad, press **POWER OFF**. b. At the Power Supply, turn off the MAIN POWER switch. 2. Power up the Analytical Station: a. Turn on the MAIN POWER switch. b. Press **POWER ON**. 3. If the message persists, call your Coulter Representative.
Diff RAM Test Failed	N/A	N/A	Yes	Event Log *DIFF RAM Test failed. Rerun test. If message persists, call Coulter Customer Operations.*			Data not transmitted.	20/24 hours	Idle - ready for request.	Diff RAM error.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

Table 6.0-5 System Messages - D *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Diff Timer Test Failed	*N/A*	N/A	Yes	Event Log *DIFF timer error. Rerun test. If message persists, call Coulter Customer Operations.*			N/A	20/24 hours	Idle - ready for request.	Diff timer error.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Diff Xmit Failure	(current status)	N/A	No	Event Log *AMC reported error - Diff transmit failure.*			N/A	N/A	Stopped - inoperable.	Analytical Station-to-Workstation transmission failure. This can happen if the Workstation is turned off or if the communication cables between the Workstation and the Analytical Station loosen while data is being transmitted.	1. Ensure the communication cables between the Workstation and the Analytical Station are properly connected. 2. Turn on or reset the Workstation. 3. Continue normal operation. If message recurs: a. Change the test mode to a non-Diff test and process non-Diff samples. b. Call your Coulter Representative.
Dil1 Card 5V Error	*NOT READY*	*DIL1 CARD 5V ERROR*	Yes	Event Log *5 Volts on Diluter 1 Card outside limit. Power down/up Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	Combination of DIFF PS and DIL1 cards' voltage errors totaling 20/24 hours.	Stopped - inoperable.	U35 on the Diluter 1 card failed (outside ±5% limit).	1. Power down the Analytical Station: a. On the Diluter keypad, press **POWER OFF**. b. At the Power Supply, turn off the MAIN POWER switch. 2. Power up the Analytical Station: a. Turn on the MAIN POWER switch. b. Press **POWER ON**. 3. If the message persists, call your Coulter Representative.
Dil1 Card +15V Error Note: If event severe, this message may not appear.	*NOT READY*	*DIL1 CARD +15V ERROR*	Yes	Event Log *+15 Volts on Diluter 1 Card outside limit. Power down/up Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	U35 on the Diluter 1 card failed (outside ±8% limit).	1. Power down the Analytical Station: a. On the Diluter keypad, press **POWER OFF**. b. At the Power Supply, turn off the MAIN POWER switch. 2. Power up the Analytical Station: a. Turn on the MAIN POWER switch. b. Press **POWER ON**. 3. If the message persists, call your Coulter Representative.

Table 6.0-5 System Messages - D *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Dil1 Card -15V Error	(current status)	*DIL1 CARD -15V ERROR*	Yes	Event Log *-15 Volts on Diluter 1 Card outside limit. Power down/up Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	U35 on the Diluter 1 card failed (outside ±8% limit).	1. Power down the Analytical Station: a. On the Diluter keypad, press **POWER OFF**. b. At the Power Supply, turn off the MAIN POWER switch. 2. Power up the Analytical Station: a. Turn on the MAIN POWER switch. b. Press **POWER ON**. 3. If the message persists, call your Coulter Representative.
Dil4 Card 12V Error	(current status)	*DIL4 CARD 12V ERROR*	Yes	Event Log *12 Volts on Diluter 4 Card outside limit. Power down/up Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	Stopped - inoperable.	U5 on the Diluter 4 card failed (outside ±5% limit).	1. Power down the Analytical Station: a. On the Diluter keypad, press **POWER OFF**. b. At the Power Supply, turn off the MAIN POWER switch. 2. Power up the Analytical Station: a. Turn on the MAIN POWER switch. b. Press **POWER ON**. 3. If the message persists, call your Coulter Representative.
Dil SOL/OP PS +15V Error	(current status)	*DIL SOL/OP PS +15V ERROR*	Yes	Event Log *+15 Volts on Diluter 2 Card outside limit. Power down/up Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	U2 on the Diluter/Solenoid/Optics Power Supply card failed (outside ±5% limit).	1. Power down the Analytical Station: a. On the Diluter keypad, press **POWER OFF**. b. At the Power Supply, turn off the MAIN POWER switch. 2. Power up the Analytical Station: a. Turn on the MAIN POWER switch. b. Press **POWER ON**. 3. If the message persists, call your Coulter Representative.
Dil SOL/OP PS -15V Error Note: If event severe, this message may not appear.	(current status)	*DIL SOL/OP PS -15V ERROR*	Yes	Event Log *-15 Volts on Diluter 2 Card outside limit. Power down/up Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	U2 on the Diluter/Solenoid/Optics Power Supply card failed (outside ±5% limit).	1. Power down the Analytical Station: a. On the Diluter keypad, press **POWER OFF**. b. At the Power Supply, turn off the MAIN POWER switch. 2. Power up the Analytical Station: a. Turn on the MAIN POWER switch. b. Press **POWER ON**. 3. If the message persists, call your Coulter Representative.

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Table 6.0-5 System Messages - D *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Dil SOL/OP PS 24V Error Note: If event severe, this message may not appear.	(current status)	*DIL SOL/OP PS 24V ERROR*	Yes	Event Log *24 Volts on Diluter 2 Card outside limit. Power down/up Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	U1 on the Diluter/Solenoid/Optics Power Supply card failed (outside ±8% limit).	1. Power down the Analytical Station: a. On the Diluter keypad, press **POWER OFF**. b. At the Power Supply, turn off the MAIN POWER switch. 2. Power up the Analytical Station: a. Turn on the MAIN POWER switch. b. Press **POWER ON**. 3. If the message persists, call your Coulter Representative.
Diluter Board Not Answering	(current status)	N/A	No	Event Log *Analyzer-To-Diluter communication failure. Reset Analytical Station.*			Data not transmitted.	20/24 hours	Idle - ready for request.	Analyzer-to-Diluter communication error.	1. Reset the Analytical Station. 2. If the message persists, call your Coulter Representative.
Diluter Card 1 Failure	*NOT READY*	*DILUTER CARD 1 FAILURE*	Yes	Event Log *Diluter 1 I/O card failure (<Tube ID>, <Cass/Pos>). Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Diluter 1 card not answering.	1. Reset the Analytical Station. 2. If the message persists, call your Coulter Representative.
Diluter Card 2 Failure	*NOT READY*	*DILUTER CARD 2 FAILURE*	Yes	Event Log *Diluter 2 I/O card failure (<Tube ID>, <Cass/Pos>). Reset Analytical Station. If Message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Diluter 2 card not answering.	1. Reset the Analytical Station. 2. If the message persists, call your Coulter Representative.
Diluter Card 3 Failure	*NOT READY*	*DILUTER CARD 3 FAILURE*	Yes	Event Log *Diluter 3 I/O card failure (<Tube ID>, <Cass/Pos>). Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Diluter 3 card not answering.	1. Reset the Analytical Station. 2. If the message persists, call your Coulter Representative.
Diluter Comm. Error	*NOT READY*	N/A	No	Event Log *Diluter communication failure. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	Stopped - inoperable.	Failure to communicate commands to Diluter.	1. Reset the Analytical Station. 2. If the message persists, call your Coulter Representative.
Diluter Echo Error	*NOT READY*	N/A	No	Event Log *Diluter communication failure. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).		Stopped - inoperable.	Diluter echo not understood by Analyzer.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

Table 6.0-5 System Messages - D *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Diluter Error	*NOT READY*	*DILUTER ERROR*	Yes	Event Log *Diluter failure. Reset Analytical Station. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Generic fatal Diluter error.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Diluter Left Power Sup. Bad	(current status)	N/A	Yes	Event Log *Diluter left power supply defective. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	5/24 hours	Stopped - inoperable.	Diluter left power supply defective.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Diluter RAM Fault	*SYSTEM FAULT*	*DILUTER RAM FAULT*	No	Event Log *Diluter memory failure. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted.	20/24 hours	Stopped - inoperable.	Internal memory error.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Diluter Right Power Sup. Bad	(current status)	N/A	Yes	Event Log *Diluter right power supply defective. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	5/24 hours	Stopped - inoperable.	Diluter right power supply defective.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Diluter TxRx Error	NOT READY	N/A	No	Event Log *Communication failure during transmission to diluter. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			N/A	5/24 hours	Stopped - inoperable.	Communications error during transmission to the Diluter.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Door Open Run Stopped	(current status)	*DOOR OPEN RUN STOPPED*	Yes	Event Log *Diluter front door open during automatic sampling mode operation. Close front door and continue operation.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Run stopped.	Diluter front door open during Automatic mode operation.	Close Diluter front door and continue operation.
DPR Diluter Packet Error and *Non-Diluter Error*	*SYSTEM FAULT* and *NOT READY*	N/A	Yes	Event Log *Invalid dual port RAM packet (<Tube ID>, <Cass/Pos>). Reset Analytical Station and rerun sample. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Idle - ready for request or cycle continues.	DPR malfunction.	1. Continue normal operation and watch for additional messages. 2. If additional messages appear, follow the corrective actions associated with those messages. 3. If this message persists: a. Change the test mode to CBC Only. b. Continue processing CBC only samples. c. Call your Coulter Representative.

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Table 6.0-5 System Messages - D *(Continued)*

Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**		**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Dump Valve Stuck Closed	*NOT READY*	*DUMP VALVE STUCK CLOSED*	Yes	Event Log *Overflow valve malfunction (remained closed) detected while turning compressor on. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data not transmitted.	Combination of errors totaling 20/24 hours.	Stopped - inoperable.	Power Supply valve malfunction.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Dump Valve Stuck Open	*NOT READY*	*DUMP VALVE STUCK OPEN*	Yes	Event Log *Overflow valve malfunction (remained open) detected while turning compressor on. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data not transmitted.		Stopped - inoperable.	Power Supply valve malfunction.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

Table 6.0-6 System Messages - E through G

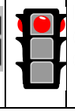
Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
ETX Rec. Error	*NOT READY*	N/A	No	Event Log *ETX not received from diluter. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	N/A	Stopped - inoperable.	Last character received from Workstation was not ETX.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Expected Command from AMC	(current status)	*EXPECTED COMMAND FROM AMC*	Yes	Event Log *Expected command from AMC, command not received. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Diluter did not receive message from AMC.	1. Reset the Analytical Station and/or Workstation. 2. If message persists, call your Coulter Representative.
Fan Power Bad	(current status)	N/A	Yes	Event Log *Power Supply 2 defective. Power down/up Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and “System Alarm” message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	U3 on power supply 2 defective.	1. Power down the Analytical Station: a. On the Diluter keypad, press **POWER OFF**. b. At the Power Supply, turn off the MAIN POWER switch. 2. Power up the Analytical Station: a. Turn on the MAIN POWER switch. b. Press **POWER ON**. 3. If the message persists, call your Coulter Representative. 4.
Fatal DPR Error and *Non-Diluter Error*	*SYSTEM FAULT* *and* *NOT READY*	N/A	Yes	Event Log *Analytical Station dual port RAM memory test failed. Reset Analytical Station.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	DPR malfunction.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

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Table 6.0-6 System Messages - E through G *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Flow Cell Clog and *Non-Diluter Error*	*SYSTEM FAULT* *and* *NOT READY*	*FLOW CELL CLOG*	Yes	Event Log *Analytical Station detected clog in flow cell and attempted three times to clear clog without success. Perform F44 function. If message persists, call Coulter Customer Operations.*			Data for VCS-affected parameters incomplete; colons (:::::) appear in VCS-affected parameter fields if clog is cleared after autoclearing. If clog is not cleared, data will not be available.	20/24 hours	Stopped - inoperable.	Analytical Station detected clog in flow cell and attempted three times to clear clog without success.	1. Reset the Analytical Station. 2. Perform F44 FLOWCELL UNCLOG 1 function. 3. If message recurs, repeat F44 FLOWCELL UNCLOG 1 function. 4. If message recurs, perform F45 FLOWCELL UNCLOG 2 function, up to three times. **CAUTION** Risk of instrument damage. Using F46 can damage the flow cell because it places greater stress on the flow cell than F44 or F45. Only use F46 if F44 and F45 fail to clear the clog, and never do F46 more than once unless specifically instructed to do so by your Coulter Representative. 5. If message recurs, perform F46 FLOWCELL UNCLOG 3 function **once**. 6. Allow Analytical Station to sit idle for 30 minutes. Then perform F44 FLOWCELL UNCLOG 1 function before analyzing samples. 7. If message persists, call your Coulter Representative.
Function Not Allowed	(current status)	N/A	No	Event Log *AMC reported error - function not allowed.*			N/A	N/A	Paused until correct function entered.	F58 or F59 selected and Analytical Station does not allow CD4 or CD8 (COMMUNICATION INTERFACE card switches).	Enter correct function for Analytical Station's mode of operation.

Table 6.0-7 System Messages - H through K

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
HGB Status Error	(current status)	*HGB STATUS ERROR*	Yes	Event Log *HGB lamp power supply defective. Call coulter customer operations.*			Data displayed.	1	Paused until error resolved.	Hgb lamp power supply defective	Call your Coulter Representative.
High Pressure High	(current status)	*HIGH PRESSURE HIGH*	Yes	Event Log *60 PSI pressure high. Adjust pressure. If 60 PSI pressure reading cannot be adjusted, call Coulter Customer Operations.*			Data displayed.	20/24 hours	Beeps - operation continues.	60 psi relief valve, compressor and/or pressure transducer functioning improperly (pressure is 71 to 80 psi).	1. Adjust 60 psi relief valve to 60 ±1 psi. 2. If 60 psi pressure reading cannot be adjusted, call your Coulter Representative.
High Pressure Low	(current status)	*HIGH PRESSURE LOW*	Yes	Event Log *60 PSI pressure low. Adjust pressure. If 60 PSI Pressure reading cannot be adjusted, call Coulter Customer Operations.*			Data displayed.	20/24 hours	Beeps - operation continues.	60 psi relief valve, compressor and/or pressure transducer functioning improperly (pressure is 45 to 49 psi) and/or line leaking.	1. Adjust 60 psi relief valve to 60 ±1 psi. 2. If 60 psi pressure reading cannot be adjusted, call your Coulter Representative.
High Pressure Too High	*NOT READY*	*HIGH PRESSURE TOO HIGH*	Yes	Event Log *60 PSI pressure out of range (too high). Adjust pressure. If 60 PSI pressure reading cannot be adjusted, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and “System Alarm” message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Beeps - operation continues. or Stopped. Depends on when error occurred.	60 psi relief valve, compressor and/or pressure transducer defective (compressor shuts OFF when pressure >80 psi).	1. Adjust 60 psi relief valve to 60 ±1 psi. (If 60 psi pressure reading cannot be adjusted, call your Coulter Representative). 2. Turn Power Supply MAIN POWER switch OFF and then ON. If message persists, call your Coulter Representative.
High Pressure Too Low	*NOT READY*	*HIGH PRESSURE TOO LOW*	Yes	Event Log *60 PSI pressure out of range (too low). Adjust pressure. If 60 PSI pressure reading cannot be adjusted, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and “System Alarm” message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Beeps - operation continues. or Stopped. Depends on when error occurred.	60 psi relief valve, compressor and/or pressure transducer defective (pressure <45 psi) and/or line leaking.	1. Adjust 60 psi relief valve to 60 ±1 psi. (If 60 psi pressure reading cannot be adjusted, call your Coulter Representative). 2. Turn Power Supply MAIN POWER switch OFF and then ON. 3. If message persists, call your Coulter Representative.
High Vacuum Low	*READY*	*HIGH VACUUM LOW*	Yes	Event Log *High vacuum too low. Power down/up Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and “System Alarm” message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Run stopped.	Vacuum pump and/or vacuum transducer defective (vacuum is <14 in. Hg) and/or line leaking.	1. Power down the Analytical Station: a. On the Diluter keypad, press **POWER OFF**. b. At the Power Supply, turn off the MAIN POWER switch. 2. Power up the Analytical Station: a. Turn on the MAIN POWER switch. b. Press **POWER ON**. 3. If the message persists, call your Coulter Representative.
Histogram Mem. Reset Error	*NOT READY*	N/A	No	Event Log *Analyzer non-communication error. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted.	20/24 hours	Stopped - inoperable.	Analyzer non-communication fatal error.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

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Table 6.0-7 System Messages - H through K *(Continued)*

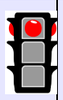
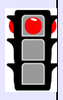
Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**		**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Illegal Interrupt and *Non-Diluter Error*	*SYSTEM FAULT* and *NOT READY*	*ILLEGAL INTERRUPT*	Yes	Event Log *AMC, Diluter or DIFF Processor hardware malfunction (<Tube ID>, <Cass/Pos>). Reset Analytical Station and rerun sample. if Message Persists, Call Coulter Customer Operations.*		Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	AMC, Diluter/Solenoid/Optics Power Supply or DIFF PROCESSOR cards' hardware malfunction.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Intermittent PS1 Supply Error	*SYSTEM FAULT*	N/A	No	Event Log *Faulty PS1 power supply. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Faulty APS1 card.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Intermittent PS2 Supply Error	*SYSTEM FAULT*	N/A	No	Event Log *Faulty PS2 power supply. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Faulty APS2 card.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Internal Cal. Fac. Error	*NOT READY*	N/A	No	Calibration Log *Incorrect calibration factors received. Reset Analytical Station and retransmit calibration factors from GEN•S Workstation.*		Data not transmitted.	20/24 hours	Stopped - inoperable.	System detected internal calibration factor error while receiving K-CAL factors from Workstation.	1. Reset the Analytical Station. 2. At Analyzer, select **ANALYZER FUNCTIONS ▸▸ CALIBRATION.** 3. Check/re-enter calibration factors and recalibrate.
Ireg Hst.	*READY*	N/A	No	N/A		Data displayed but flagged	N/A	Idle - ready for request.	System detected a "spike" in the platelet histogram.	1. Continue operation. 2. If message occurs on other samples, call your Coulter Representative.
Keyboard Interrupt Error and *Non-Diluter Error*	*SYSTEM FAULT* and *NOT READY*	*KEYBOARD INTERRUPT ERROR*	Yes	Event Log *Diluter keypad failure. Reset Analytical Station. If message persists, call Coulter Customer Operations*		Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable	Diluter keyboard failure.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

Table 6.0-8 System Messages - L

Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**		**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Label Not Read Run Stopped	(current status)	*LABEL NOT READ RUN STOPPED*	Yes	Event Log *Unable to read cassette label. Check label and scanner. Rerun sample.*		Data not available.	N/A	Run stopped	Unable to read cassette label.	1. Clean the bar-code reader. 2. Check the cassette label and clean or replace the label if necessary. 3. Continue operation. If message persists, use a different cassette. 4. If message still persists, call your Coulter Representative.
Laser Voltage Lower Failed	(current status)	N/A	Yes	Event Log *Laser voltage below limit (<Tube ID>, <Cass/Pos>). If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	If AutoStop/Flow Cell switch is OFF, run continues. If AutoStop/Flow Cell switch is ON, run is stopped at end of cycle.	Voltage is 1181 to 1230 Vdc.	1. Reset the Analytical Station. 2. Continue normal operation and watch for additional messages. 3. If additional messages appear, follow the corrective actions associated with the messages. 4. If this message persists: a. Change the test mode to a non-Diff test. b. Continue processing non-Diff samples. c. Call your Coulter Representative.
Laser Voltage Too High	*NOT READY*	N/A	Yes	Event Log *Laser voltage too high. If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Idle - ready for request.	Voltage ≥1520 Vdc.	1. Reset the Analytical Station. 2. Continue normal operation and watch for additional messages. 3. If additional messages appear, follow the corrective actions associated with the messages. 4. If this message persists: a. Change the test mode to a non-Diff test. b. Continue processing non-Diff samples. c. Call your Coulter Representative.
Laser Voltage Too Low	*NOT READY*	N/A	Yes	Event Log *Laser voltage too low. If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Idle - ready for request.	Voltage ≤1180 Vdc.	1. Reset the Analytical Station. 2. Continue normal operation and watch for additional messages. 3. If additional messages appear, follow the corrective actions associated with the messages. 4. If this message persists: a. Change the test mode to a non-Diff test. b. Continue processing non-Diff samples. c. Call your Coulter Representative.

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Table 6.0-8 System Messages - L *(Continued)*

Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**		**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Laser Voltage Upper Failed	(current status)	N/A	Yes	Event Log *Laser voltage above limit (<Tube ID>, <Cass/Pos>). If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		If AutoStop/Flow Cell switch is OFF, run continues. If AutoStop/Flow Cell switch is ON, run is stopped at end of cycle.	Voltage is 1470 to 1519 Vdc.	1. Reset the Analytical Station. 2. Continue normal operation and watch for additional messages. 3. If additional messages appear, follow the corrective actions associated with the messages. 4. If this message persists: a. Change the test mode to a non-Diff test. b. Continue processing non-Diff samples. c. Call your Coulter Representative.
Left Lift Not Up and *Diluter Error*	*SYSTEM FAULT* *and* *MANUAL MODE*	*LEFT LIFT NOT UP*	Yes	Event Log *Rocker bed obstructed (left lift not up) or faulty sensor (<Tube ID>, <Cass/Pos>). Remove obstruction and restart Analytical Station.*		Data displayed if available (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	Automatic mode disabled; Manual mode operable.	Obstruction or faulty sensor.	1. Ensure the left lift is unobstructed. 2. Reset the Analytical Station. 3. Continue normal operation. If message persists, call your Coulter Representative. You can run samples in the Manual mode.
Left Load Fail and *Diluter Error*	*SYSTEM FAULT* *and* *MANUAL MODE*	*LEFT LOAD FAIL*	Yes	Event Log *Rocker bed obstructed (left lift not down) or faulty sensor (<Tube ID>, <Cass/Pos>). Remove obstruction and restart Analytical Station.*		Data displayed if available (depends upon when error occurred).		Automatic mode disabled; Manual mode operable.	Obstruction or faulty sensor.	1. Ensure the left lift is unobstructed. 2. Reset the Analytical Station. 3. Continue normal operation. If message persists, call your Coulter Representative. You can run samples in the Manual mode.
Left Stack Full	(current status)	*LEFT STACK FULL*	Yes	Event Log *Maximum number of cassettes (12) already loaded, obstruction or faulty switch. Remove at least one cassette and continue operation. If message persists, call Coulter Customer Operations.*		Data displayed if available (depends upon when error occurred).	20/24 hours	Run stopped.	Maximum number of cassettes (12) already loaded or switch stuck/failed.	1. If the unloading bay is full (12 cassettes), remove the cassettes from the unloading bay. 2. If the unloading bay is not full, check the sensor and ensure it is not stuck. If necessary, gently pull down on the sensor plate at the top of the unloading bay. 3. Continue normal operation. If the message persists, call your Coulter Representative.
Level Check Fail Caused Stop	(current status)	*LEVEL CHECK FAIL CAUSED STOP*	Yes	Event Log *Replace reagent container. If message persists, call Coulter Customer Operations.*		Data displayed if available (depends upon when error occurred).	20/24 hours	Run stopped.	Analytical Station detected a low fluidic condition that could produce a level sense problem.	1. Check the reagent containers and replace any that are low. 2. Press **START/CONT** to resume normal operation. 3. If the message recurs, call your Coulter Representative.
Level C------	*READY*	*LEVEL C------*	Yes	Reagents Log *Reservoir low on cleaner. replace cleaner container and press **start/cont** On Diluter keypad to continue.*		Data displayed if available (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	Cycling inhibited until sensor error resolved.	Reservoir low on cleaning agent.	1. Replace cleaning agent container. 2. Press **START/CONT** to resume normal operation.

Table 6.0-8 System Messages - L *(Continued)*

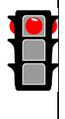
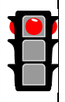
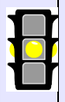
Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**		**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Level -D-----	*READY*	*LEVEL -D-----*	Yes	Reagents Log *Reservoir low on diluent. replace diluent container and press **START/CONT** on Diluter keypad to continue.*		Data displayed if available (depends upon when error occurred).		Cycling inhibited until sensor error resolved.	Reservoir low on diluent.	1. Replace diluent container. 2. Press **START/CONT** to resume normal operation.
Level --L----	*READY*	*LEVEL --L----*	Yes	Reagents Log *Reservoir low on cbc lyse. replace CBC Lyse container and press **START/CONT** on Diluter keypad to continue.*		Data displayed if available (depends upon when error occurred).		Cycling inhibited until sensor error resolved.	Reservoir low on CBC lytic reagent.	1. Replace CBC lytic reagent container. 2. Press **START/CONT** to resume normal operation.
Level ---P---	*READY*	*LEVEL ---P---*	Yes	Reagents Log *Reservoir low on DIFF PAK. Replace DIFF PAK container and press **START/CONT** on Diluter keypad to continue.*		Data displayed if available (depends upon when error occurred).		Cycling inhibited until sensor error resolved.	Reservoir low on diff lytic reagent and/or diff preservative.	1. Replace DIFF PAK container. 2. Press **START/CONT** to resume normal operation.
Level ----R--	*READY*	*LEVEL ----R--*	Yes	Reagents Log *Reservoir low on Retic PAK. Replace Retic PAK container and press **START/CONT** on Diluter keypad to continue.*		Data displayed if available (depends upon when error occurred).		Cycling inhibited until sensor error resolved.	Reservoir low on retic stain and/or retic clearing solution.	1. Replace RETIC PAK container. 2. Press **START/CONT** to resume normal operation.
Level -----V-	*READY*	*LEVEL -----V-*	Yes	Reagents Log *Vacuum overflow tank full. Empty Vacuum overflow tank and Press **START/CONT** on Diluter keypad to continue.*		Data displayed if available (depends upon when error occurred).	20/24 hours	Cycling inhibited until sensor error resolved.	Vacuum overflow tank full.	1. Empty vacuum overflow tank. 2. Press **START/CONT** to resume normal operation.
Level ------W	*READY*	*LEVEL ------W*	Yes	Reagents Log *Waste container full. empty or replace waste container and press **START/CONT** on Diluter keypad to continue.*		Data displayed if available (depends upon when error occurred).	20/24 hours	Cycling inhibited until sensor error resolved.	Waste container full.	1. Empty or replace waste container. 2. Press **START/CONT** to resume normal operation.
Low Vacuum Drifted	(current status)	*LOW VACUUM DRIFTED*	Yes	Event Log *Low vacuum drifted. Adjust low vacuum. If low vacuum reading cannot be adjusted, call Coulter Customer Operations.*		Data displayed.	20/24 hours	Beeps - operation continues.	Low vacuum between 5.8-5.9 or 6.1-6.2 in. Hg and/or low vacuum regulator and/or vacuum pump defective.	1. Adjust low vacuum regulator to 6 ±0.010 in. Hg (if low vacuum reading cannot be adjusted, call your Coulter Representative). 2. If message persists, call your Coulter Representative.

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Table 6.0-8 System Messages - L *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Low Vacuum High	*READY*	*LOW VACUUM HIGH*	Yes	Event Log *Low vacuum too high. Adjust low vacuum. If low vacuum reading cannot be adjusted, call Coulter Customer Operations.*			Data not available.	Combination of errors totaling 20/24 hours.	Run stopped.	Low vacuum outside limit (vacuum >6.21 in. Hg) and/or low vacuum regulator and/or vacuum pump defective.	1. Adjust low vacuum regulator to 6 ±0.010 in. Hg (if low vacuum reading cannot be adjusted, call your Coulter Representative). 2. If message persists, call your Coulter Representative.
Low Vacuum Low	*READY*	*LOW VACUUM LOW*	Yes	Event Log *Low vacuum too low. Adjust low vacuum. If low vacuum reading cannot be adjusted, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and “System Alarm” message printed in footer of sample report (depends upon when error occurred).		Run stopped.	Low vacuum outside limit (vacuum <5.8 in. Hg) and/or low vacuum regulator and/or vacuum pump defective.	1. Adjust low vacuum regulator to 6 ±0.010 in. Hg (if low vacuum reading cannot be adjusted, call your Coulter Representative). 2. If message persists, call your Coulter Representative.

Table 6.0-9 System Messages - M through O

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Manual Probe Not In	(current status)	*MANUAL PROBE NOT IN*	Yes	Event Log *Manual sampling probe did not retract (<Tube ID>, <Cass/Pos>). Check for obstruction or faulty sensor and rerun sample. If message persists, call Coulter Customer Operations.*			Data not available.	20/24 hours	Stopped - inoperable.	Aspirator tip, probe wipe mechanism, and/or sensor malfunction.	1. Ensure the aspirator tip is unobstructed. 2. Ensure the cleaning truck in the Probe-Wipe module is correctly aligned with the aspirator tip. 3. Reset the Analytical Station. 4. Continue normal operation and watch for messages. 5. If additional messages appear, follow the corrective actions associated with those messages. 6. If this message persists, call your Coulter Representative.
Monitor Task Did Not Finish	*SYSTEM FAULT*	N/A	No	Event Log *DIFF Processor monitor command did not finish. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted.	20/24 hours	Stopped - inoperable.	DIFF PROCESSOR card monitor command did not finish.	1. Reset the Analytical Station and/or Workstation. 2. If message persists, call Coulter Customer Operations.
No ACK From Diluter	*NOT READY*	N/A	No	Event Log *Invalid Diluter command. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	Combination of No ACK From Diluter, No ETX, and Non-ASCI From Diluter errors totaling 20/24 hours.	Stopped - inoperable.	Diluter response command contained unknown code	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
No ETX	*NOT READY*	N/A	No	Event Log *ETX not received from Diluter. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).		Stopped - inoperable.	Last character received from Diluter was not ETX.	1. Reset the Analytical Station. 2. If message persists, call Coulter Customer Operations.
No Retics Control In This Mode	*READY*	N/A	Yes	Event Log *Retic control material used in CBC or CBC/DIFF test mode.*			Data not available.	N/A	Run stopped.	Retic control material used in CBC or CBC/DIFF test mode.	Change the Analytical Station test mode to RETIC, CBC/RETIC or CBC/DIFF/RETIC.
No Wand ID	(current status)	*NO WAND ID*	Yes	Event Log *ID not read by wand or ID was not available. Re-enter ID using wand or manually using diluter keypad.*			Data not transmitted.	N/A	Beeps.	ID not read by handled scanner or ID was not available.	Re-enter ID using handheld scanner or enter ID using Diluter keypad.
Non-ASCII From Diluter	*NOT READY*	N/A	No	Event Log *Invalid Character received from Diluter. Reset Analytical station. if Message Persists, Call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	Combination of No ACK From Diluter, No ETX, and Non-ASCI From Diluter errors totaling 20/24 hours.	Stopped - inoperable.	Non-ASCII character received while exchanging data with Diluter.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

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Table 6.0-9 System Messages - M through O *(Continued)*

Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**		**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Not Ready For AMC Data	*NOT READY*	*NOT READY FOR AMC DATA*	Yes	Event Log *Diluter not ready to receive data from AMC. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Communication error.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Operator Alert 09	*NOT READY*	N/A	Yes	Event Log *AMC reported error - Operator Alert 09.*		Data not transmitted.	N/A	Stopped - inoperable.	Miscommunication between the Analyzer and the Diluter.	1. Reset the Analytical Station.and reposition the cassette. 2. If message persists, call your Coulter Representative.

Table 6.0-10 System Messages - P through Q

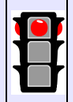
Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**		**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
PC Not Receiving	*NOT READY*	N/A	No	Event Log *AMC reported error - PC not ready. Reset Analytical Station. if message persists, Call Coulter Customer Operations.*		Data not available.		Stopped - inoperable.	Workstation not receiving data from Analytical Station.	1. Reset the Analytical Station and/or Workstation. 2. If message persists, call your Coulter Representative.
Peltier Heater Sensor Bad	(current status)	PELTIER HEATER SENSOR BAD	Yes	Event Log *Peltier heater sensor defective or disconnected. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data displayed.	20/24 hours	Idle - ready for request.	Faulty or disconnected sensor.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Peltier Temp. Outside Limits	(current status)	PELTIER TEMP. OUTSIDE LIMITS	Yes	Event Log *Peltier temperature is outside limits. Reset Analytical station. if Message Persists, Call Coulter Customer Operations.*		Data displayed.	20/24 hours	Idle - ready for request.	Temperature control failure.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
PLT No Fit Aperture X Mode Out Note: "X" appears as 1, 2 or 3.	(current status)	N/A	No	Event Log *Platelet fit algorithm failed (<Tube ID>,<Cass/Pos>). If message occurs on other samples, call Coulter Customer Operations.*		Data displayed but flagged.		Idle - ready for request.	Platelet fit algorithm failed.	If message occurs on other samples, call your Coulter Representative.
Probe Obstructed	(current status)	*PROBE OBSTRUCTED*	Yes	Event Log *Manual sampling probe did not retract (<Tube ID>, <Cass/Pos>). Remove obstruction. If message persists, call Coulter Customer Operations.*		Data displayed.	20/24 hours	Paused until error resolved.	Obstruction preventing aspirator tip retraction.	1. Remove obstruction from aspirator tip area. 2. If message persists, call your Coulter Representative.
Probe Wipe Down Fail and *Non-Diluter Error*	*SYSTEM FAULT* *and* *NOT READY*	*PROBE WIPE DOWN FAIL*	Yes	Event Log *Manual sampling probe wipe obstructed (not down) (<Tube ID>, <Cass/Pos>). Remove obstruction. If message persists, call Coulter Customer Operations.*		Data displayed.	Combination of errors totaling 20/24 hours.	Stopped - inoperable.	Obstruction or faulty sensor.	1. Remove obstruction. 2. Reset the Analytical Station. 3. If message persists, call your Coulter Representative.
Probe Wipe Failed and *Non-Diluter Error*	*SYSTEM FAULT* *and* *NOT READY*	*PROBE WIPE FAILED*	Yes	Event Log *Manual sampling probe wipe obstructed (<Tube ID>, <Cass/Pos>). Remove obstruction. If message persists, call Coulter Customer Operations.*		Data Displayed.		Stopped - inoperable.	• Sensor is obstructed or faulty • Probe-wipe mechanism is obstructed or faulty	1. Remove obstruction. 2. Reset the Analytical Station. 3. If message persists, call your Coulter Representative.
Probe Wipe Truck Not Home and *Non-Diluter Error*	*SYSTEM FAULT* *and* *NOT READY*	*PROBE WIPE TRUCK NOT HOME*	Yes	Event Log *Manual sampling probe wipe obstructed (not home) (<Tube ID>, <Cass/Pos>). Remove obstruction. If message persists, call Coulter Customer Operations.*		Data displayed.		Stopped - inoperable.	• Sensor is obstructed or faulty • Probe-wipe mechanism is obstructed or faulty.	1. Remove obstruction. 2. Reset the Analytical Station. 3. If message persists, call your Coulter Representative.

Table 6.0-10 System Messages - P through Q *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Probe Wipe Up Fail and *Non-Diluter Error*	*SYSTEM FAULT* and *NOT READY*	*PROBE WIPE UP FAIL*	Yes	Event Log *Manual sampling probe wipe obstructed (not up) (<Tube ID>, <Cass/Pos>). Remove obstruction. If message persists, call Coulter Customer Operations.*			Data displayed.		Stopped - inoperable.	Obstruction or faulty sensor.	1. Remove obstruction. 2. Reset the Analytical Station. 3. If message persists, call your Coulter Representative.
PS1 +5V Supply High	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 1 problem: +5 Volts above limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	Stopped - inoperable.	+5 V power to power supply 1 outside +5% limit.	Call your Coulter Representative.
PS1 +5V Supply Low	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 1 problem: +5 Volts below limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	+5 V power to power supply 1 outside -5% limit.	Call your Coulter Representative.
PS1 +15V Supply High	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 1 problem: +15 Volts above limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	+15 V power to power supply 1 outside +5% limit.	Call your Coulter Representative.
PS1 +15V Supply Low	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 1 problem: +15 Volts below limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	+15 V power to power supply 1 outside -5% limit.	Call your Coulter Representative.
PS1 -15V Supply High	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 1 problem: -15 Volts above limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	-15 V power to power supply 1 outside +5% limit.	Call your Coulter Representative.
PS1 -15V Supply Low	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 1 problem: -15 Volts below limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	-15 V power to power supply 1 outside -5% limit.	Call your Coulter Representative.
PS2 +5V Supply High	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 2 problem: +5 Volts above limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	Combination of errors totaling20/24 hours.	Stopped - inoperable.	+5 V power to power supply 2 outside +5% limit.	Call your Coulter Representative.
PS2 +5V Supply Low	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 2 problem: +5 Volts below limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	+5 V power to power supply 2 outside -5% limit.	Call your Coulter Representative.

Table 6.0-10 System Messages - P through Q *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
PS2 +12V Supply High	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 2 problem: +12 Volts above limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	+12 V power to power supply 2 outside +5% limit.	Call your Coulter Representative.
PS2 +12V Supply Low	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 2 problem: +12 Volts below limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	+12 V power to power supply 2 outside -5% limit.	Call your Coulter Representative.
PS2 +15V Supply High	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 2 problem: +15 Volts Above limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	+15 V power to power supply 2 outside +5% limit.	Call your Coulter Representative.
PS2 +15V Supply Low	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 2 problem: +15 Volts below limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	+15 V power to power supply 2 outside -5% limit.	Call your Coulter Representative.
PS2 -15V Supply High	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 2 problem: -15 Volts above limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	-15 V power to power supply 2 outside +5% limit.	Call your Coulter Representative.
PS2 -15V Supply Low	*SYSTEM FAULT*	N/A	No	Event Log *Power Supply 2 problem: -15 Volts below limit. Call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		Stopped - inoperable.	-15 V power to power supply 2 outside -5% limit.	Call your Coulter Representative.
P/W Harness Not Connected	(current status)	*P/W HARNESS NOT CONNECTED*	Yes	Event Log *The probe wipe harness is not connected. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed.	20/24 hours	Beeps- operation continues.	Harness not connected.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

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Table 6.0-11 System Messages - R

Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**		**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Red/White Reset Error	*NOT READY*	N/A	Yes	Event Log *Red/white processor counter(s) did not reinitialize. Reset Analytical Station. If message persists, Call Coulter Customer Operations.*		Data not transmitted.	20/24 hours	Stopped - inoperable.	Red and white counter did not reset to zero value.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Retic Accumulation Not Finished	*NOT READY*	N/A	No	Event Log *Incomplete Retic collection. Reset Analytical Station.*		Data not transmitted.	20/24 hours	Stopped - inoperable.	Error during retic data accumulation.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Retic Laser Offset Lower Failed	*READY*	N/A	Yes	Event Log *Retic laser offset too low. If message persists, call Coulter Customer Operations*		Data displayed	N/A	Idle - ready for request.	Analytical Station not adjusted properly.	If message persists, call your Coulter Representative.
Retic Laser Offset Upper Failed	*READY*	N/A	Yes	Event Log *Retic Laser offset too high. If message persists, call Coulter Customer Operations*		Data displayed	N/A	Idle - ready for request.	Analytical Station not adjusted properly.	If message persists, call your Coulter Representative.
Retic Pressure Lower Failed	(current status)	N/A	Yes One beep	Event Log *Retic sample pressure below limit (<Tube ID>, <Cass/Pos>). If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	If AutoStop/Flow Cell switch is OFF, run continues. If AutoStop/Flow Cell switch is ON, run is stopped at end of cycle.	Pressure reading <0.3 psi.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Retic Pressure Upper Failed	(current status)	N/A	Yes One beep	Event Log *Retic sample pressure above limit (<Tube ID>, <Cass/Pos>). If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		If AutoStop/Flow Cell switch is OFF, run continues. If AutoStop/Flow Cell switch is ON, run is stopped at end of cycle.	Pressure reading >2.2 psi.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Retic Xmit Failure	(current status)	N/A	No	Event Log *AMC reported error - Retic transmit failure.*		Data not transmitted.	N/A	Stopped - inoperable.	Analytical Station-to-Workstation transmission failure.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
RF Lower Limit Failed	(current status)	N/A	Yes	Event Log *RF (6.3V) voltage reading below limit (<Tube ID>, <Cass/Pos>). If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	If AutoStop/Flow Cell switch is OFF, run continues. If AutoStop/Flow Cell switch is ON, run is stopped at end of cycle.	Reading <5.8 V.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

Table 6.0-11 System Messages - R *(Continued)*

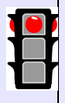
Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
RF Upper Limit Failed	(current status)	N/A	Yes	Event Log *RF (6.3V) voltage reading above limit (<Tube ID>, <Cass/Pos>). If message persists, call Coulter Customer Operations.*			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		If AutoStop/Flow Cell switch is OFF, run continues. If AutoStop/Flow Cell switch is ON, run is stopped at end of cycle.	Reading >6.7 V.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
RF Voltage Low and *Non-Diluter Error*	*SYSTEM FAULT* *and* *NOT READY*	*RF VOLTAGE LOW*	Yes	Event Log *RF voltage reading below limit. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	RF 300 V power supply low (scaled down voltage is 4.7 Vdc ±2%).	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Right Lift Not Down and *Diluter Error*	*SYSTEM FAULT* *and* *MANUAL MODE*	*RIGHT LIFT NOT DOWN*	Yes	Event Log *Rocker bed obstructed (right lift not down) or faulty sensor (<Tube ID>, <Cass/Pos>). Remove obstruction and rerun sample. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	Automatic mode disabled; Manual mode operable.	Obstruction or faulty sensor.	1. Ensure the right lift is unobstructed. 2. Reposition the cassette. 3. Reset the Analytical Station. 4. Continue normal operation. 5. If message persists, call your Coulter Representative. You can run samples in the Manual mode.
Right Lift Not Up and *Diluter Error*	*SYSTEM FAULT* *and* *MANUAL MODE*	*RIGHT LIFT NOT UP*	Yes	Event Log *Rocker bed obstructed (right lift not up) or faulty sensor (<Tube ID>, <Cass/Pos>). Remove obstruction and rerun sample. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).		Automatic mode disabled; Manual mode operable.	Obstruction or faulty sensor.	1. Ensure the right lift is unobstructed. 2. Reposition the cassette. 3. Reset the Analytical Station. 4. Continue normal operation. 5. If message persists, call your Coulter Representative. You can run samples in the Manual mode.
Right Stack Full	(current status)	*RIGHT STACK FULL*	Yes	Event Log *Right stack full. remove one or more cassette(s), or check switch. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Run stopped.	Maximum number of cassettes (12) already loaded or switch stuck/failed.	1. If the loading bay is full (12 cassettes), remove at least one cassette. 2. If the loading bay is not full, check the sensor and ensure it is not stuck. If necessary, gently pull down on the sensor plate at the top of the loading bay. 3. Continue normal operation. If the message persists, call your Coulter Representative.

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Table 6.0-11 System Messages - R *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Run Aborted. PC Not Ready.	*SYSTEM FAULT and NOT READY*	N/A/	No	Event Log *AMC reported error - run aborted, PC not ready*			N/A	N/A	Stopped - inoperable.	AMC to Workstation communication error. This could indicate: • The Workstation is OFF. • The cables connecting the Analyzer and the Workstation are loose or disconnected. • A hardware or software malfunction.	1. Ensure the Workstation is on. If not, turn on the Workstation, log onto the Workstation and go to step 4. 2. Ensure the cables between the Analyzer and the Workstation are connected. If not, connect the cables and go to step 4. 3. If the Workstation is turned on, shutdown and restart it, then go to step 4. 4. Reset the Analytical Station. 5. Continue normal operation. If message persists, call your Coulter Representative.
R/W Data Mem. Interference	*NOT READY*	N/A	Yes	Event Log *Analyzer memory read/write failure. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted.	20/24 hours	Stopped - inoperable.	Internal memory error.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

Table 6.0-12 System Messages - S

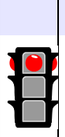
Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**		**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Same Label Read Run Stopped	(current status)	*SAME LABEL READ RUN STOPPED*	Yes	Event Log *Cassette did not advance to next position. check for obstruction. If message persists, call Coulter Customer Operations.*		Data displayed.	20/24 hours	Run stopped.	The cassette did not advance to the next position, or the same cassette was put back on the rocker bed while the rocker bed was still active.	1. Reset the Analytical Station and reposition the cassette. 2. Press **START/CONT** and ensure the cassette advances on the rocker bed. 3. If the message persists, call your coulter Representative. You can run samples in the Manual mode.
Sample Removed Too Soon	(current status)	*SAMPLE REMOVED TOO SOON*	Yes	Event Log *Operator removed sample from probe before aspiration was complete (<Tube ID>, <Cass/Pos>). Rerun sample.*		Data displayed.	N/A	Beeps - operation continues.	Operator removed sample from aspirator tip before aspiration was complete.	1. Wait for the System to return to *READY.* 2. Present sample to aspirator tip again. Do not remove sample until Analytical Station beeps, indicating aspiration is complete.
Sample Tube Not Detected	(current status)	*SAMPLE TUBE NOT DETECTED*	Yes	Event Log *Sample tube not detected. Tube detector sensor malfunction or tube detector needs adjustment. If message persists, call Coulter Customer Operations.*		N/A	5/24 hours	Beeps - operation continues.	Tube detector sensor malfunction or tube detector needs adjustment.	1. Reset the Analytical Station and reposition the cassette. 2. If the message persists, call your Coulter Representative. You can run samples in the Manual mode.
Scanner Error and *Diluter Error*	*SYSTEM FAULT* *and* *MANUAL MODE*	*SCANNER ERROR*	Yes	Event Log *Invalid tube label type read by scanner (<Tube ID>, <Cass/Pos>). Check label.*		Data displayed if available (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	Stopped - inoperable.	Invalid label type received from scanner.	1. Clean the scanner. 2. Reset the Analytical Station, then retry the tube. 3. If message persists, try another tube. 4. If message still persists, call your Coulter Representative.
Scanning Fault and *Diluter Error*	*SYSTEM FAULT* *and* *MANUAL MODE*	*SCANNING FAULT*	Yes	Event Log *Bar code scanner pressure too low or scanner obstructed (<Tube ID>, <Cass/Pos>). Check scanner. If message persists, call Coulter Customer Operations.*		Data displayed if available (depends upon when error occurred).		Automatic mode disabled; Manual mode operable.	Scanner stuck.	1. Ensure the scanner is unobstructed. 2. Reset the Analytical Station. 3. Continue normal operation. If the message recurs, call your Coulter Representative. You can run samples in the Manual mode.
Sheath Pressure Lower Failed	(current status)	N/A	Yes One beep	Event Log *Sheath sample pressure below limit (<Tube ID>, <Cass/Pos>). To verify pressure, run Daily Checks background test.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	If AutoStop/Flow Cell switch is OFF, run continues. If AutoStop/Flow Cell switch is ON, run is stopped at end of cycle.	Pressure reading <6.25 psi.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Sheath Pressure Upper Failed	(current status)	N/A	Yes One beep	Event Log *Sheath sample pressure above limit (<Tube ID>, <Cass/Pos>). To verify pressure, run Daily Checks background test.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).		If AutoStop/Flow Cell switch is OFF, run continues. If AutoStop/Flow Cell switch is ON, run is stopped at end of cycle.	Pressure reading >6.55 psi.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

Table 6.0-12 System Messages - S *(Continued)*

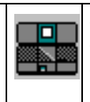
Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**		**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Sheath Tank Not Full and *Non-Diluter Error*	*SYSTEM FAULT* and *NOT READY*	*SHEATH TANK NOT FULL*	Yes	Event Log *Diluent level low or faulty sheath tank float sensor. Perform F20 function and replace diluent container. If message persists, call Coulter Customer Operations.*		Data displayed if available (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	Stopped - inoperable.	Diluent level low or faulty float and/or sensor.	1. Check diluent container for sufficient volume and replace if necessary. 2. Reset the Analytical Station. 3. If volume of diluent is adequate or if message recurs: a. Use F20 to check operation of the sheath tank. b. Check for leaks and kinks in the tubing around the sheath tank. 4. Continue operation. If message persists, call your Coulter Representative.
Sheath Tank Still Full and *Non-Diluter Error*	*SYSTEM FAULT* and *NOT READY*	*SHEATH TANK STILL FULL*	Yes	Event Log *Faulty sheath tank float sensor. Perform F20 function. If message persists, call Coulter Customer Operations.*		Data displayed if available (depends upon when error occurred).		Stopped - inoperable.	Faulty float and/or sensor.	1. Reset the Analytical Station. 2. If message persists: a. Use F20 to check operation of the sheath tank. b. Check for leaks and kinks in the tubing around the sheath tank. 3. Continue operation. If message persists, call your Coulter Representative.
SPC A/D Status Error	*NOT READY*	*SPC A/D STATUS ERROR*	Yes	Event Log *Faulty SPC A/D. Power down/up Analytical Station. If message persists, call Coulter Customer Operations.*		N/A	20/24 hours	Stopped - inoperable.	SPC card's A/D status unsatisfactory.	1. Power down the Analytical Station: a. On the Diluter keypad, press **POWER OFF**. b. At the Power Supply, turn off the MAIN POWER switch. 2. Power up the Analytical Station: a. Turn on the MAIN POWER switch. b. Press **POWER ON**. 3. If the message persists, call your Coulter Representative.
SPC Power Supply Bad	(current status)	N/A	Yes	Event Log *SPC power supply defective. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data displayed if available (depends upon when error occurred).	5/24 hours	Stopped - inoperable.	SPC card's power supply defective.	1. Reset the Analytical Station. 2. If the message persists, call your Coulter Representative.

Table 6.0-12 System Messages - S *(Continued)*

Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**		**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
SPC Status Not Ready	*NOT READY*	*SPC STATUS NOT READY*	Yes	Event Log *Faulty SPC A/D. Power down/up Analytical Station. If message persists, call Coulter Customer Operations.*		N/A	20/24 hours	Stopped - inoperable.	SPC card's status register indicates a "not ready" condition.	1. Power down the Analytical Station: a. On the Diluter keypad, press **POWER OFF**. b. At the Power Supply, turn off the MAIN POWER switch. 2. Power up the Analytical Station: a. Turn on the MAIN POWER switch. b. Press **POWER ON**. 3. If the message persists, call your Coulter Representative.
Stack Overflow	*NOT READY*	N/A	No	Event Log *Internal software failure. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Internal software problem.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Stain Heater Disabled	(current status)	*STAIN HEATER DISABLED*	Yes	Event Log *Stain heater disabled for current cycle. Heater temperature not within expected limits. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Run stopped when Retic cycle is run.	Temperature control failure.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Stain Heater Sensor Bad	(current status)	*STAIN HEATER SENSOR BAD*	Yes	Event Log *Stain heater sensor defective or disconnected. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Run stopped when Retic cycle is run.	Faulty or disconnected sensor.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Stain Temp Hi. Heater Disabled	(current status)	*STAIN TEMP. HI HEATER DISABLED*	*Yes*	Event Log *Stain temperature high. Heater disabled. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Run stopped when Retic cycle is run.	Temperature control failure.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Stain Temp Low. Run Stopped	(current status)	*STAIN TEMP LOW. RUN STOPPED*	Yes	Event Log *Stain temperature low. Heater disabled. Reset Analytical Station. If message persists, call Coulter Customer Operations.*		Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	20/24 hours	Run stopped when Retic cycle is run.	Temperature control failure.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Stripper Plate Not In and *Diluter Error*	*SYSTEM FAULT* *and* *MANUAL MODE*	*STRIPPER PLATE NOT IN*	Yes	Event Log *Stripper plate obstructed (not in) or faulty sensor. Remove obstruction and restart Analytical Station. If message persists, call Coulter Customer Operations.*		Data displayed if available (depends upon when error occurred).	Combination of errors totaling 20/24 hours.	Automatic mode disabled; Manual mode operable.	Obstruction or faulty sensor.	1. Ensure the stripper plate is unobstructed. 2. Reset the Analytical Station. 3. Continue normal operation. If the message recurs, call your Coulter Representative. You can run samples in the Manual mode.

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Table 6.0-12 System Messages - S *(Continued)*

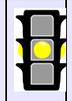
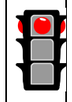
Analytical Station				Workstation				System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**		**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Stripper Plate Not Out and *Diluter Error*	*SYSTEM FAULT* and *MANUAL MODE*	*STRIPPER PLATE NOT OUT*	Yes	Event Log *Stripper plate obstructed (not out) or faulty sensor. Remove obstruction and restart Analytical Station. If message persists, call Coulter Customer Operations.*		Data displayed if available (depends upon when error occurred).		Automatic mode disabled; Manual mode operable.	Obstruction or faulty sensor.	1. Ensure the stripper plate is unobstructed. 2. Reset the Analytical Station. 3. Continue normal operation. If the message recurs, call your Coulter Representative. You can run samples in the Manual mode.
STX Rec. Error	*NOT READY*	N/A	No	Calibration Log *Incorrect calibration factor Transmission. Retransmit calibration factors from GEN•S Workstation. If message persists, call Coulter Customer Operations.*		Data not transmitted.	20/24 hours	Stopped - inoperable.	The first character not STX while receiving K-CAL factors.	1. Reset the Analytical Station. 2. Retransmit the calibration factors to the Analyzer. 3. Continue normal operation. If message recurs, call your Coulter Representative.

Table 6.0-13 System Messages - T through Z

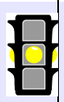
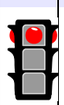
Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Three Consecutive Voteouts	*NOT READY*	N/A	No	Event Log *Three consecutive voteouts of WBC, RBC, PLT Or MCV. Verify proper connection of coaxial cables and verify baths contain diluent. If message persists, call Coulter Customer Operations.*			Data available for the three consecutive samples.	20/24 hours	Stopped - inoperable.	Three consecutive voteouts of WBC, RBC, Plt or MCV.	1. Verify proper connection of coaxial cables. 2. Verify baths contain diluent. 3. Verify apertures are not blocked. 4. Reset the Analytical Station. 5. Use F03 and ensure no microbubbles are present. 6. If message persists, call your Coulter Representative.
Two NAKs From Diluter	*NOT READY*	N/A	No	Event Log *Analyzer-Diluter Communication failure: two Naks sent from diluter. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Two NAKs detected while receiving data from Diluter.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Two NAKs Sent From AMC	*NOT READY*	N/A	No	Event Log *Analyzer-Diluter communication failure: two Naks sent from AMC. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	20/24 hours	Stopped - inoperable.	Two NAKs detected while transmitting data to Diluter.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Unknown Diff Error Message	(current status)	N/A	Yes	Event Log *AMC-DIFF communication failure: unknown. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed.	20/24 hours	Idle - ready for request.	Communication error between DIFF PROCESSOR card and AMC.	1. Reset the Analytical Station. 2. Continue normal operation and watch for messages. 3. If additional messages appear, follow the corrective actions associated with the messages. 4. If this messages persists: a. Select the CBC only test mode. b. Run CBC only samples. c. Call your Coulter Representative.
Unknown Diluter Error Message Note: If event severe, this message may not appear.	(current status)	N/A	Yes	Event Log *Analyzer-Diluter communication failure: unknown. Reset Analytical Station. If message persists, Call Coulter Customer Operations.*			Data displayed.	20/24 hours	Idle - ready for request.	AMC detected invalid error code transmitted by Diluter.	1. Reset the Analytical Station. 2. Continue normal operation and watch for messages. 3. If additional messages appear, follow the corrective actions associated with the messages. 4. If this message persists, call your Coulter Representative.
Vls Air Error	*NOT READY*	N/A	Yes	N/A			Data not transmitted, or data transmitted and “System Alarm” message printed in footer of sample report (depends upon when error occurred).	5/24 hours	Stopped - inoperable.	.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

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Table 6.0-13 System Messages - T through Z *(Continued)*

Analytical Station				Workstation					System Status/Recovery		
Analyzer Alert Message	**Analyzer Status Message**	**Diluter Screen Message**	**Beeps**	**Log Message and Icon on Command Center**			**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Vls Diluent Error	*NOT READY*	N/A	Yes	N/A			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	5/24 hours	Stopped - inoperable.		1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Vls Range Error	*NOT READY*	N/A	Yes	N/A			Data not transmitted, or data transmitted and "System Alarm" message printed in footer of sample report (depends upon when error occurred).	5/24 hours	Stopped - inoperable.	.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Wrong Cal Factors	*NOT READY*	N/A	No	Event Log *Incorrect calibration factors or bath voltages. re-enter calibration factors and/or bath voltages.*			Data not transmitted.	20/24 hours	Stopped - inoperable.	Incorrect calibration factors or bath voltages.	1. Reset the Analytical Station. 2. Re-enter the calibration factors and/or aperture voltages. 3. Continue normal operation. If the message recurs, call your Coulter Representative.
Wrong Command Interpretation	*NOT READY*	*INVALID COMMAND XX RECEIVED*	Yes	Event Log *Diluter received an invalid command from the AMC. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data displayed if available (depends upon when error occurred).	N/A	Stopped - inoperable.	Invalid command received by Diluter.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Wrong Command Sequence	*NOT READY*	*NOT READY FOR XX COMMAND AFTER YY*	Yes	N/A			Data displayed if available (depends upon when error occurred).	N/A	Stopped - inoperable.	Communication error.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.
Wrong Echo Xmit	*NOT READY*	N/A	No	Event Log *AMC-DIFF communication failure: wrong echo. Reset Analytical Station. If message persists, call Coulter Customer Operations.*			Data not transmitted.	20/24 hours	Stopped - inoperable.	Wrong echo received from Diluter while transmitting data.	1. Reset the Analytical Station. 2. If message persists, call your Coulter Representative.

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6 TABLES OF WORKSTATION MESSAGES

Table 6.0-1 Workstation Messages - A through C

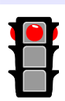
Workstation						System Status/Recovery		
Log Message and Icon on Command Center			**Applicable Log**	**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
A Control Lot number archive file was created. **Internal Message Code:** EV_CONTROL_LOT_ARCHIVED			Control	N/A	N/A	Ready	Operator created a control archive file.	Status only; no action necessary.
Automatic CBC calibration factors updated from analyzer (WBC=<9.999>, RBC=<9.999>, HGB=<9.999>, MCV=<9.999>, PLT=<9.999>, MPV=<9.999>). **Internal Message Code:** AUTO_CAL_FACTORS_UPDATE_ANAL			Calibration	N/A	N/A	Ready	Received new automatic CBC calibration factors from Analyzer.	Status only; no action necessary.
Automatic CBC calibration factors updated from GEN•S (WBC= <9.999>, RBC=<9.999>, HGB=<9.999>, MCV=<9.999>, PLT=<9.999>, MPV=<9.999>). **Internal Message Code:>** AUTO_CAL_FACTORS_UPDATE_GENS			Calibration	N/A	N/A	Ready	Operator-initiated transmission of automatic CBC calibration factors succeeded.	Status only; no action necessary.
Auto-Numbering has been enabled auto number is <Auto-Numbering Start ID>. **Internal Message Code:** EV_AUTONUMBER_ ENABLED			Event	SID of next run received will be replaced by the current Auto Numbered SID.	N/A	Ready	Operator enabled the SID Auto-Numbering feature.	Status only; no action necessary.
Auto-Numbering has been disabled. **Internal Message Code:** EV_AUTONUMBER_DISABLED			Event	N/A	N/A	Ready	Operator disabled the SID Auto-Numbering feature.	Status only; no action necessary.
Background <Test Name(s)> test failed: (<List Of Parameters That Failed With Result>). **Internal Message Code:** EV_BACKGROUND_TEST_FAILED			Daily Checks	N/A	N/A	Ready	During a background test, one of the background test parameters failed. Background test parameters are HGB Blank, HGB Read, WBC, RBC, HGB, PLT, DIFF, RETIC, Sheath Pressure, Diff Pressure, Retic Pressure, Diff LS Offset, Retic LS Offset, Laser Voltage, RF 300 Volts, RF 6.3 Volts and Inst. Temp.	1. Repeat the background test. 2. If the message persists, call your Coulter Representative.
Background <Test Name(s)> test within limits. **Internal Message Code:** EV_BACKGROUND _TEST_IN_LIMITS			Daily Checks	N/A	N/A	Ready	The background test passed for the test specified.	Status only; no action necessary.
Bad RCV Buffer End. **Internal Message Code:** EV_INTCOL_BAD_RCV_BUFFER			Event	N/A	N/A	Ready	Data transmitted by Host to Workstation (ToDo List upload) was unrecognizeable or inconsistent.	1. LIS should retransmit. 2. If the message persists, call your Coulter Representative.
Calibration factor transmission failed. **Internal Message Code:** EV_CALIB_FAC_TRANSMISSION_FAILED			Calibration	N/A	N/A	Ready	Operator-initiated transmission of calibration factors failed.	Manually enter the calibration factors at the Analyzer. Follow the Changing Calibration Factors for Automatic Aspiration Mode procedure in the Online Help system.

Table 6.0-1 Workstation Messages - A through C

Workstation						System Status/Recovery		
Log Message and Icon on Command Center			**Applicable Log**	**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Carryover failed: (<List Of Parameters That Failed With Result>). **Internal Message Code:** EV_CARRY_FAILED			Carryover	N/A	N/A	Ready	At least one parameter for the last carryover test performed on the specified Analytical Station was outside the predefined limits. Carryover parameters are WBC, RBC, HGB, PLT, DIFF and RETIC.	1. If the WBC value is out of limits, obtain a different specimen with a WBC count of 10,000 ±1,000 and repeat the carryover test. 2. Otherwise, repeat the carryover test with the same specimen. 3. If the message persists, call your Coulter Representative.
Carryover passed. **Internal Message Code:** EV_CARRY_PASSED			Carryover	N/A	N/A	Ready	All parameters for the last carryover test performed on the specified Analytical Station were within the predefined limits.	Status only; no action necessary.
CBC calibration needs adjustments for parameters: <List Of Parameters>. **Internal Message Code:** EV_CALIB_NEEDS_ADJUSTMENTS			Calibration	N/A	N/A	Ready	The parameters specified need calibration factor adjustments.	Call your Coulter Representative.
CBC calibration outside limits for the following parameters: <List Of Parameters>. **Internal Message Code:** EV_CALIB_OUTSIDE_LIMITS			Calibration	N/A	5/24 hours	Ready	The parameters specified are outside the limits.	Call your Coulter Representative, and if recommended by your Coulter Representative: 1. Check results on the Calibration window. 2. Adjust parameters as needed.
Collate failed because flow cell clogged (<Run SID>, <Run C/P>) and (<Pre-Assigned SID>, <Pre-Assigned C/P>) **Internal Message Code:** EV_COLLATE_FAIL_FLOWCELL			Event	Saved as separate sample run in the database.	N/A	Ready	Flow cell is clogged.	1. Press ALARM RESET to turn off the alarm. 2. Check the specimens and ensure: a. The volume was sufficient b. It does not contain clots or fibrin. c. It was collected and stored correctly. 3. Reset the Analytical Station. 4. Perform F44 FLOWCELL UNCLOG 1 function. 5. If message recurs, repeat F44 FLOWCELL UNCLOG 1 function. 6. If message recurs, perform F45 FLOWCELL UNCLOG 2 function, up to three times. **CAUTION** Risk of instrument damage. Using F46 can damage the flow cell because it places greater stress on the flow cell than F44 or F45. Only use F46 if F44 and F45 fail to clear the clog, and never do F46 more than once unless specifically instructed to do so by your Coulter Representative. 7. If message recurs, perform F46 FLOWCELL UNCLOG 3 function **once**. 8. Allow Analytical Station to sit idle for 30 minutes. Then perform F44 FLOWCELL UNCLOG 1 function before analyzing samples. 9. If message persists, call your Coulter Representative.

Table 6.0-1 Workstation Messages - A through C

Workstation						System Status/Recovery		
Log Message and Icon on Command Center			**Applicable Log**	**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Collate failed because of RBC overrange (<Run SID>, <Run C/P>) And (<Pre-Assigned SID>, <Pre-Assigned C/P>) **Internal Message Code:** EV_COLLATE_FAIL_OVERRANGE			Event	Saved as a separate sample run in the database.	N/A	Ready	RBC overrange.	Follow your laboratory's policies for reviewing the sample. If you want these results collated with the previous test results, you must edit the previous test results and add the results.
Collate failed because of RBC voteout (<Run SID>, <Run C/P>) And (<Pre-Assigned SID>, <Pre-Assigned C/P>) **Internal Message Code:** EV_COLLATE_FAIL_VOTEOUT			Event	Saved as a separate sample run in the database.	N/A	Ready	RBC voteout.	Follow your laboratory's policies for reviewing the sample. If you want these results collated with the previous test results, you must edit the previous test results and add the results.
Collate failed because the sample is too old (<Run SID>, <Run C/P>) And (<Pre-Assigned SID>, <Pre-Assigned C/P>) **Internal Message Code:** EV_COLLATE_FAIL_OLD_SAMPLE:			Event	Saved as separate sample run in the database.	N/A	Ready	SID matches ToDo List entry for collated run, but 24 hours elapsed since the first test was run.	1. Obtain a fresh specimen and reassign it to the ToDo List. 2. Run the fresh specimen.
Collate has modified database results, edit has been discarded **Internal Message Code:** EV_COLLATE_MODIFY_DATABASE			Event	Saved as separate sample run in the database.	N/A	Ready	Operator entered sample results on GEN•S Workstation and then ran the specimen to produce the same test result.	Status only; no action necessary.
Control Folder <Lot #> is expired (<Expiration Date>). Yellow traffic light is displayed if Control AutoStop option is disabled. Red traffic light is displayed if Control AutoStop option is enabled. **Internal Message Code**: EV_CONTROL_FOLDER_EXPIRED	 	 	Control	N/A	N/A	Analytical Station stopped if Control AutoStop option is enabled.	The GEN•S Workstation compared the control run date with the control folder expiration date and found that the run date is past the expiration date. This could indicate: • Control number was specified incorrectly. • Expiration date was set up incorrectly. • Control material has expired.	1. Ensure the proper lot number was used for the control. 2. Ensure the expiration date for the control was set up correctly. 3. If you changed the lot number or expiration date, rerun the control. Otherwise: a. Discard the control materials. b. Set up a new control. c. Run the new control.
Control folder for lot number <XXXXXX> created. **Internal Message Code:** EV_CONTROL_FOLDER_CREATED			Control	N/A	N/A	Ready	Operator created new control folder for the specified lot number from system Setup [Quality Assurance].	Status only; no action necessary.
Control folder for lot number <XXXXXX> deleted. **Internal Message Code:** EV_CONTROL_LOT_DELETED			Control	N/A	N/A	Ready	Operator deleted control folder for the specified lot number from System Setup [Quality Assurance].	Status only; no action necessary.

Table 6.0-1 Workstation Messages - A through C

Workstation						System Status/Recovery		
Log Message and Icon on Command Center			**Applicable Log**	**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Control folder for lot number <XXXXXX> edited. **Internal Message Code:** EV_CONTROL_FOLDER_UPDATED			Control	N/A	N/A	Ready	Operator edited control folder from System Setup [Quality Assurance].	Status only; no action necessary.
Control run for control folder <Lot #> out of range. Yellow traffic light is displayed if Control AutoStop option is disabled. Red traffic light is displayed if Control AutoStop option is enabled. **Internal Message Code:** EV_CONTROL_FOLDER_OUT_OF_RANGE			Control	N/A	N/A	Analytical Station stopped if Control AutoStop option is enabled.	At least one of the parameter results for the control run received is outside the expected range (or lab limits). This could indicate: • Improper mixing. • Control is stored in the wrong folder. • Control information was set up incorrectly. • Statistical outlier. • Change in the control material. • Bubbles or clog in the flow cell (latex controls only). • Analytical Station problem.	Refer to the procedure in the Online Help System and in Chapter 3 of the Operator's Guide for what to do when a control is outside its expected ranges or what to do when a latex control is outside its expected ranges.

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Table 6.0-2 Workstation Messages - D through N

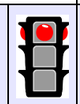
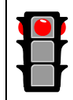
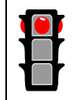
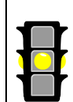
Workstation						System Status/Recovery		
Log Message and Icon on Command Center			**Applicable Log**	**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Daily check background <Test Name(s)> test failed: (<List Of Parameters That Failed With Result>). **Internal Message Code:** EV_DAILY_CHECK_BACKGROUND_TEST_FAILED			Daily Checks	N/A	5/24 hours	Ready	During a background test, one of the background test parameters failed. Background test parameters are HGB Blank, HGB Read, WBC, RBC, HGB, PLT, DIFF, RETIC, Sheath Pressure, Diff Pressure, Retic Pressure, Diff LS Offset, Retic LS Offset, Laser Voltage, RF 300 Volts, RF 6.3 Volts and Inst. Temp.	1. Perform a background test or rerun startup. 2. Check if calibration, which may have affected startup results, was performed recently. 3. Call your Coulter Representative.
Daily check of main system failed: (<List Of Components That Failed>) **Internal Message Code:** EV_DAILY_CHECK_MAIN_SYSTEM_FAILED			Daily Checks	N/A	5/24 hours	Ready	At least one of the following main system components failed: Diluter, Analyzer, Power Supply, communications, HGB voltages/readings and VCS module.	1. Perform background, ramp, or precision tests as needed; or rerun startup. 2. Call your Coulter Representative.
Daily Check Passed. **Internal Message Code:** EV_DAILYCHECKS_PASS			Daily Checks	N/A	N/A	Ready	Daily Check (StartUp) passed.	Status only; no action necessary.
Daily check precision test failed: (<List Of Parameters That Failed With Result>). **Internal Message Code:** EV_DAILY_CHECK_PRECISION_TEST_FAILED			Daily Checks	N/A	N/A	Ready	During a Daily Check operation (StartUp), one of the following Precision test parameters failed: WBC, RBC, HGB, HCT, MCV, MCH, MCHC, RDW, PLT, MPV, PCT, PDW.	1. Verify that the baths contain only clean diluent (no bleach or cleaning agent) and that the diluent covers the apertures. 2. Repeat the Precision test at the Analyzer. 3. If the message recurs, call your Coulter Representative.
Daily check ramp test failed: (<List Of Parameters That Failed With Result>). **Internal Message Code:** EV_DAILY_CHECK_RAMP_TEST_FAILED			Daily Checks	N/A	N/A	Ready	During a Daily Check operation (StartUp), one of the following Ramp test parameters failed: WBC, RBC, HGB, HCT, MCV, MCH, MCHC, RDW, PLT, MPV, PCT, PDW.	1. Verify that the baths contain only clean diluent (no bleach or cleaning agent) and that the diluent covers the apertures. 2. At the Analyzer, repeat the Ramp test. 3. If the message recurs, call your Coulter Representative.
Duplicate run date and/or run time received (<Run SID>, <Run C/P>). **Internal Message Code:** EV_DUPLICATE_RUN_DATE_TIME			Event	"System Alarm" message printed in footer of sample report.	5/24 hours	Analytical Station stopped.	The GEN•S Workstation received a sample run with an invalid run date and/or run time or two sample runs with the same date and time.	1. Reset the Analytical Station. 2. Check the clock on the Analyzer screen to see if it is incrementing. If it is not, call your Coulter Representative.
Failed to connect to database. **Internal Message Code:** EV_DBCONNECT_FAILED			Event	N/A	5/24 hours	Ready	The GEN•S Workstation application could not find the GEN•S Workstation database. This could indicate: • Database setup is changed. • Database is corrupted. • System files for the database are deleted. Note: The Analytical Station is allowed to analyze samples, but results will not be saved.	1. Shutdown and restart the Workstation. 2. Continue operation. 3. If message persists, call your Coulter Representative.
Flow cell voltages/pressures out of specifications (<Run SID>, <Run C/P>). **Internal Message Code:** EV_INST_FLOWPRESSVOL			Event	"System Alarm" message printed in footer of sample report.	N/A	Ready	Analytical Station detected a flow cell problem such as Diff or Retic sheath pressure or voltages out of specifications.	If message persists, call Coulter Representative.
Interpreter Collator has timed-out indicating a possible Analytical Station malfunction **Internal Message Code:** EV_INTCOL_TIMEOUT			Event	None	5/24 hours	Unknown	Communications with the Analytical Station were interrupted.	1. Reset the Analytical Station. 2. Check connections. 3. If message persists, call your Coulter Representative.

Table 6.0-2 Workstation Messages - D through N *(Continued)*

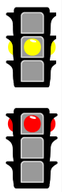
Workstation						System Status/Recovery		
Log Message and Icon on Command Center			**Applicable Log**	**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
IQAP data collected. **Internal message Code:** EV_IQAP_COLLECTED			Control	N/A	N/A	Ready	Operator or RCS performed an IQAP data collection.	Status only; no action necessary.
Last Two XB/XM batches are outside limits. Yellow traffic light is displayed if XB/XM AutoStop option is disabled. Red traffic light is displayed if XB/XM AutoStop option is enabled. **Internal Message Code:** EV_XBXM_BATCHES_OUTSIDE_LIMITS			XB/XM	N/A	N/A	Analytical Station stopped if XB/XM AutoStop option (2 batches out) is enabled.	Last XB/XM batch is outside limits.	1. Ensure all results are reportable. If necessary, exclude nonreportable results from the statistics. 2. Check the results for a nonrandom sample distribution. • If a nonrandom sample distribution is the problem, document the problem based on your laboratory's protocol and continue processing samples. • Otherwise, troubleshoot for a possible Analytical Station problem.
Last XB/XM Batch is out of limits. Yellow traffic light is displayed if XB/XM AutoStop option is disabled. Red traffic light is displayed if XB/XM AutoStop option is enabled. **Internal Message Code:** EV_XBXM_LASTBATCHOUT			XB/XM	N/A	N/A	Analytical Station stopped if XB/XM AutoStop option (If batch out) is enabled.	The last XB/XM batch is outside limits.	1. Ensure all results are reportable. If necessary, exclude nonreportable results from the statistics. 2. Check the results for a nonrandom sample distribution. • If a nonrandom sample distribution is the problem, document the problem based on your laboratory's protocol and continue processing samples. • Otherwise, troubleshoot for a possible Analytical Station problem.
Latex sample run received but cannot be accepted. Results discarded. **Internal Message Code:** EV_LATEX_SAMPLE_NOT_ACCEPTED			Calibration	Discarded.	N/A	Ready	The run received is of latex type (F55, F56, F57, F58) and cannot be received in Reproducibility, Carryover or CBC Calibration modes.	1. Change Processing Control on the Command Center to CONTROL RUN. 2. Rerun the control. 3. If the message persists, call your Coulter Representative.
Manual CBC calibration factors updated from analyzer (WBC =<9.999>, RBC=<9.999>, HGB=<9.999>, MCV=<9.999>, PLT=<9.999>, MPV=<9.999>). **Internal Message Code:** EV_MAN_CAL_FACTORS_UPDATE_ANAL			Calibration	N/A	N/A	Ready	Received new manual CBC calibration factors from Analyzer.	Status only: no action necessary.
Maximum # Of Repro runs Exceeded - Sample Not Stored **Internal Message Code:** EV_REPRO_MAXRUNS_EXCEEDED			Reproducibiliy	N/A	N/A	Ready	User attempted to run more than the maximum allowable reproducibility cycles.	Change operating mode from Reproducibility to Auto Analysis
MISMATCH: Non-positive ID of sample run received does not match pre-assigned ID (<Run C/P>, <Run SID>), (<Pre-Assigned SID>, <Pre-Assigned C/P>). **Internal Message Code:** EV_ID_MISMATCH			Event	Sample run status set to *MISMATCH*. Results reported.	N/A	Ready	Nonpositive ID of the sample run received does not match the preassigned ID. This condition can occur only when the Cass/Pos (only) is used and any of the following occurs: • Tube is misplaced in the cassette. • Tube ID is not read. • Preassigned sample ID is entered incorrectly.	1. Check the cassette, tube, and labels. Ensure that the tube is in the correct position and the label is properly placed and readable. If necessary, reposition the tube or label, or replace the label for future use. 2. Check the sample ID preassignment values. If they are incorrect, edit the values.

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Table 6.0-2 Workstation Messages - D through N *(Continued)*

Workstation						System Status/Recovery		
Log Message and Icon on Command Center			**Applicable Log**	**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
NO MATCH: Sample run received does not match any ToDo list entry (<Run C/P>, <Run SID>). Yellow traffic light is displayed until AutoStop condition is reached. Red traffic light is displayed when AutoStop condition is reached. **Internal Message Code:** EV_RUN_NO_MATCH_TODO_LIST_ENTRY			Event	Sample run status set to *NO MATCH*. Results reported.	N/A	Analytical Station stopped after 3 consecutive *NO MATCH* errors, or a total of 10 *NO MATCH, NO READ or PART.ASP.* errors.	The sample run received does not match a ToDo List entry, and the After 3 No Match AutoStop option is selected. This could indicate: • Preassigned Cass/Pos or sample ID was entered incorrectly. • Sample was run in incorrect test mode • Tube was misplaced in the cassette • Incorrect test assigned in the ToDo List. • Label is smudged. • Label is misplaced. • Bar-code reader is dirty.	1. Select on the Operator Alert window. 2. Check the ToDo list. If identification information is incorrect, edit the information. 3. Check the cassette, tube, and labels. Ensure that the tube is in the correct position and the label is properly placed and readable. If necessary, reposition the tube or label, or replace the label for future use. 4. Clean the bar-code reader. 5. If the message persists, contact your Coulter Representative.
NO READ: Sample run received without proper identification (<Run C/P>, <Run SID>). Yellow traffic light is displayed until AutoStop condition is reached. Red traffic light is displayed when AutoStop condition is reached. **Internal Message Code:** EV_RUN_NO_PROPER_IDENTIFICATION			Event	Sample run status set to *NO READ*. Results reported.	N/A	Analytical Station stopped after 3 consecutive *NO READ* errors, or a total of 10 *NO MATCH*, *NO READ* or *PART.ASP.* errors.	The sample run received is not properly identified. This condition can occur only when the positive identification scheme used is Cass/Pos and SID.This could indicate: • Label is smudged. • Tube or label is misplaced. • Bar-code reader is dirty.	1. Select on the Operator Alert window. 2. Check the cassette, tube, and labels. Ensure that the tube is in the correct position and the label is properly placed and readable. If necessary, reposition the tube or label, or replace the label for future use. 3. Clean the bar-code reader. 4. If the message persists, contact your Coulter Representative.

Table 6.0-3 Workstation Messages - O through Z

Workstation						System Status/Recovery		
Log Message and Icon on Command Center			**Applicable Log**	**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Operator acknowledged <ToDo, Control, XB/XM, Date/Time> system stop error(s). **Internal Message Code:** EV_OPER_SYSTEM_STOP			Event	N/A	N/A	Analytical Station previously stopped will now analyze samples.	Operator acknowledged the ToDo, Control, XB/XM or Date/Time error conditions. The Analytical Station is allowed to analyze samples.	Status only; no action necessary.
Operator <Operator ID> added <Location Name> to the location list. **Internal Message Code:** EV_SETUP_LOCATION_ADDED			Event	N/A	N/A	N/A	Operator added the specified location to the location list.	Status only; no action necessary.
Operator <Operator ID> added <Physician's First Name, Last Name> to the physician list. **Internal Message Code:** EV_SETUP_PHYSICIAN_ADDED			Event	N/A	N/A	N/A	Operator added the specified physician to the physician list.	Status only; no action necessary.
Operator <Operator ID> changed location <Location Name> to <Location Name>. **Internal Message Code:** EV_SETUP_LOCATION_MODIFIED			Event	N/A	N/A	N/A	Operator changed the specified location from the location list to another location.	Status only; no action necessary.
Operator <Operator ID> changed <Physician's First Name, Last Name> to <Physician's First Name, Last Name> **Internal Message Code:** EV_SETUP_PHYSICIAN_MODIFIED			Event	N/A	N/A	N/A	Operator changed the specified physician from the physician list to another physician.	Status only; no action necessary.
Operator <Operator ID> changed reagents setup. **Internal Message Code:** EV_REAGENT_CHANGED			Reagent	N/A	N/A	Ready	Operator changed the reagent setup information	Status only; no action necessary.
Operator <Operator ID> changed Shifts definition : ([HH:MM:SS, HH:MM:SS, HH:MM:SS] Or [No Shifts]). **Internal Message Code:** EV_SETUP_SHIFTS_CHANGED			Event	N/A	N/A	N/A	Operator modified the shift setup. Add to the message the starting time for each shift defined, or "No shifts" if the operator decided to work without shifts.	Status only; no action necessary.
Operator <Operator ID> changed XB/XM setup. **Internal Message Code:** EV_SETUP_XBXM_CHANGED			XB/XM	N/A	N/A	N/A	Operator edited XB/XM target and/or limit values from Setup [Quality Assurance].	Status only: no action necessary.
Operator <Operator ID> deleted <Location Name> from the location list. **Internal Message Code:** EV_SETUP_LOCATION_DELETED			Event	N/A	N/A	N/A	Operator deleted the specified location from the location list.	Status only; no action necessary.
Operator <Operator ID> deleted <Physician's First Name, Last Name> from the physician list. **Internal Message Code:** EV_SETUP_PHYSICIAN_DELETED			Event	N/A	N/A	N/A	Operator deleted the specified physician to from the physician list.	Status only; no action necessary.
Operator <Operator ID> deleted <# of Runs> Run(s) from Control Folder <Lot #>. **Internal Message Code:** EV_CONTROL_RUNS_DELETED			Control	N/A	N/A	N/A	Operator deleted specified runs from selected control folder.	Status only; no action necessary.

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Table 6.0-3 Workstation Messages - O through Z *(Continued)*

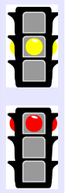
Workstation						System Status/Recovery		
Log Message and Icon on Command Center			**Applicable Log**	**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Operator <Operator ID> installed <Reagent Type><Coulter/Non-Coulter> Reagent Lot to : <New Lot#>, opened on <Open Date> with open expiration <Open Exp> **Internal Message Code:** EV_REAGENT_INSTALLED			Reagent	N/A	N/A	Ready	The operator updated information for the reagent <Lot #>.	Status only; no action necessary.
Operator selected assay limits for control folder <Lot #>. **Internal Message Code:** EV_CONTROL_ASSAY_SELECTED			Control	N/A	N/A	N/A	Operator selected assay limits for the specified control folder.	Status only; no action necessary.
Operator selected laboratory limits for control folder <Lot #>. **Internal Message Code:** EV_CONTROL_L,BRATORY_SELECTED			Control	N/A	N/A	N/A	Operator selected laboratory limits for the specified control folder.	Status only; no action necessary.
Part.Asp.: aspiration error on sample (<Run C/P>, <Run Sid>). Yellow traffic light is displayed until AutoStop condition is reached. Red traffic light is displayed when AutoStop condition is reached. **Internal Message Code:** EV_PARTIAL_ASPIRATION			Event	Sample run status set to *PART.ASP.* Results flagged with “P”.	N/A	Analytical Station stopped after a total of 10 *NO MATCH, NO READ* or *PART.ASP.* errors.	Aspiration error was detected by the Analytical Station for the sample run received.	Until the System stops, you can press ALARM RESET to turn off the alarm and continue processing samples. When the System stops: 1. Press ALARM RESET to turn off the alarm. 2. Select on the Operator Alert window. 3. Check the specimens and ensure: a. The volume was sufficient b. It does not contain clots or fibrin. c. It was collected and stored correctly. **WARNING** Skin puncture from the needle, which could contain biohazardous material, can occur. Use extreme care when inspecting the needle area. 4. If specimens are acceptable: a. Check the needle for plugs. b. Ensure the aspiration lines are clean. c. Troubleshoot the sample flow path for leaks, kinks or plugs. 5. Reset the Analytical Station. 6. Continue normal operation. 7. If the message recurs, call your Coulter Representative. You can run samples in the Manual mode.
Password changed. **Internal Message Code:** EV_SETUP_PASSWORD_CHANGED			Event	N/A	N/A	N/A	Operator currently logged on has changed his password.	Status only; no action necessary.
Patient sample identification scheme changed To: <Positive Identification>. **Internal Message Code:** EV_PAT_ID_CHANGE			Event	N/A	N/A	Ready	Operator changed the patient sample run positive identification scheme to: SID, Cass/Pos, or SID and Cass/Pos.	Status only; no action necessary.

Table 6.0-3 Workstation Messages - O through Z *(Continued)*

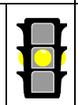
Workstation						System Status/Recovery		
Log Message and Icon on Command Center			**Applicable Log**	**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
Precision Test failed: (<List Of Parameters That Failed With Result>). **Internal Message Code:** EV_PRECISION_TEST_FAIL			Daily Checks	N/A	5/24 hours	Ready	One of the following Precision test parameters failed: WBC, RBC, HGB, HCT, MCV, MCH, MCHC, RDW, PLT, MPV, PCT, PDW.	1. Verify that the baths contain only clean diluent (no bleach or cleaning agent) and that the diluent covers the apertures. 2. At the Analyzer, repeat the Precision test. 3. If the message recurs, call your Coulter Representative.
Precision test passed. **Internal Message Code:** EV_PRECISION_SUCCESSFUL			Daily Checks	N/A	N/A	Ready	The Precision test passed.	Status only; no action necessary.
Ramp Test failed: (<List Of Parameters That Failed With Result>). **Internal Message Code:** EV_RAMP_TEST_FAIL			Daily Checks	N/A	5/24 hours	Ready	One of the following ramp test parameters failed: WBC, RBC, HGB, HCT, MCV, MCH, MCHC, RDW, PLT, MPV, PCT, PDW.	1. Verify that the baths contain only clean diluent (no bleach or cleaning agent) and that the diluent covers the apertures. 2. At the Analyzer, repeat the Ramp test. 3. If the message recurs, call your Coulter Representative.
Ramp Test values within limits. **Internal Message Code:** EV_RAMP_SUCCESSFUL			Daily Checks	N/A	N/A	Ready	The Ramp test passed	Status only; no action necessary.
<Reagent Lot #> reagent has expired. **Internal Message Code:** EV_STARTUP_REAGENT_EXPIRED			Reagent	N/A	N/A	Ready	The reagents mentioned is expired: Diluent, CBC Lyse, Diff Pak, Retic Pak and/or cleaner.	1. Check the expiration date for the reagent to make sure it was entered properly. 2. If necessary, change the reagent information. 3. If the reagent has expired - a. Replace the reagent. b. Enter the lot number and expiration date for the new reagent.
Repro Set Deleted **Internal Message Code:** EV_REPRO_SET_DELETED			Reproducibility				The operator cleared the reproducibility table.	Status only; no action necessary.
Unable to locate <Registry Value> under <Registry Key>. **Internal Message Code:** EV_CANNOT_LOCATE_REGISTRY_VALUE			Event	N/A	5/24 hours	Analytical Station stopped.	The GEN•S Workstation could not find the specified registry entry.	Workstation software may need to be reinstalled. If the problem persists, call your Coulter Representative. **Service Only:** 1. Insert the Workstation CD-ROM into the CD-ROM drive. 2. Reinstall the Workstation software.
XB/XM all batches were deleted **Internal Message Code:** EV_XBXM_CLEARALLBATCHES			XB/XM	N/A	N/A	Ready	The operator cleared all XB/XM batches.	Status only; no action necessary.
XB/XM current batch was deleted **Internal Message Code:** EV_XBXM_LASTBATCHDEL			XB/XM	N/A	N/A	Ready	The operator deleted the current XB/XM batch.	Status only; no action necessary.

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Table 6.0-3 Workstation Messages - O through Z *(Continued)*

Workstation						System Status/Recovery		
Log Message and Icon on Command Center			**Applicable Log**	**Sample Results**	**RCS™ Application Call Msg/Time**	**System Status**	**Probable Cause**	**Corrective Action**
XB/XM Report printed for current batch. **Internal Message Code:** EV_XB/XM_REPORT_CURRENT			XB/XM	N/A	N/A	N/A	The current XB/XM batch was completed. A tabular report is automatically printed if the XB/XM Auto-Print On option is set to **Every Batch** or **If Out**.	Status only; no action necessary.
XB/XM Summary Report printed for last <X> batches. **Internal Message Code:** EV_XBXM_SUMMARY_REPORT			XB/XM	N/A	N/A	N/A	A set of (X) XB/XM batches was completed. A summary tabular report is automatically printed if the XB/XM Auto-Print On option is set to **Every 20 Batches**.	Status only; no action necessary.

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REFERENCES

1. NCCLS document H15-A. Reference procedure for the quantitative determination of hemoglobin in blood. National Committee for Clinical Laboratory Standards. Villanova, PA, 1984.
2. NCCLS document H7-A. Procedure for determining packed cell volume by the microhematocrit method. National Committee for Clinical Laboratory Standards. Villanova, PA, 1985.

REFERENCES

A

Ampere, a unit of electric current.

Accuracy

Ability of the instrument to agree with a predetermined reference value.

Action Limits

Values established by your laboratory to flag results requiring action.

Algorithm

A particular procedure for performing an analysis.

Analytical Station

The Analyzer, Diluter, and Power Supply of the GEN•S System.

Analyzer Pulse

A graphical display on the Analyzer screen that indicates the condition of all the apertures. You can detect noise, bubbles, or a clogged flow cell by monitoring the pulses.

ANSI

American National Standards Institute.

Application

A computer program, generally started from a button or icon. For example the Patient Tests application.

ASCII

American Standard Code for Information Interchange.

Aspiration Mode

The method of running a sample, closed vial (Automatic aspiration mode) or open vial (Manual aspiration mode).

Assay Values

Values of all parameters for a control established by extensive assay of that control. These values are provided by the manufacturer of the control.

Also called: assigned values.

ASTM

American Society for Testing and Materials.

AutoCollation

A Workstation feature that automatically combines results of different test modes (CBC/Diff and Retic) analyzed from a sample with an identical patient or sample ID. The different test modes must be performed within a predetermined time.

Automatic Aspiration Mode

The closed-vial method of running a sample. You place a closed tube sample in a cassette and place the cassette on the GEN•S loading bay. The GEN•S System automatically reads the cassette label and tube label (if present) and aspirates the sample.

Also called: closed-vial mode, primary mode, automatic sampling mode.

Automatic Startup Cycles

Pressing START UP starts automatic startup cycles. When you press this button, the system flushes the cleaning agent from all Diluter components and tubing. It also performs electronic and fluidic checks to ensure the instrument is ready to analyze control or whole-blood samples. Specifically, the instrument:

- Performs reagent and waste level sensing
- Replaces the cleaning agent with diluent
- Performs a background count in the baths and flow cell
- Measures Hgb-blank and Hgb-sample voltages
- Performs ramp-pulse and precision-pulse tests
- Performs an electronic check of the Triple Transducer Module (flow cell).

AutoNumbering

A Workstation feature that assigns a number to each sample received from the instrument.

Autopurge

If 24 hours elapse with the power on, pneumatics off, and the instrument in shutdown, the system automatically:

- Turns on the pneumatics
- Drains and fills the baths
- Purges the flow cell and associated sample lines with cleaning agent
- Turns off the pneumatics.

During this process, the system displays messages, such as PERFORMING MINI PRIME and AUTOPURGE on the Diluter Keypad.

AutoSequencing

A Workstation feature used with the ToDo list to automatically increment the identifiers you specify (Cass/Pos, sample ID, and sequence number).

When you enter the sample ID, ensure you type the same number of digits as exist on your bar-code labels, including leading zeros.

AutoStop

A Workstation feature that instructs the instrument to stop processing based on specific criteria.

Average Value

A value that is computed by dividing the sum of a set of values by the number of values. Usually referred to as the simple arithmetic mean.

Background Count

A measure of the amount of electrical or particle interference using a diluent sample or no sample.

Background Results

Background results indicate reagent quality and the presence of electronic noise or bubbles. Background results above certain levels cause concern since they might falsely elevate (or interfere with) the results obtained for blood and control samples.

Batch

A group or set of results.

- For XB Analysis, a batch equals 20 patient samples used for monitoring MCV, MCH and MCHC as an automated QC procedure
- For printing or transmitting, a batch equals the samples you selected from the database.

Batch Mean

The mean or average of a set of samples. For XB Analysis, the batch mean is a value based on a statistical averaging technique and is a type of "weighted moving average." It is used to estimate what a simple average result of a very large number of samples (population mean) might be by using a small number of samples.

Batch Print Job

Selecting multiple items from the database, then selecting the print button to print all of them at the same time.

Baud

A rate defining how many data bits per second are transferred during communications between two pieces of equipment.

Calibration

A procedure to standardize the instrument for accuracy by determining its deviation from calibration references and applying any necessary correction factors.

Calibration Disk

A data diskette containing the Assigned Values for the lot number of the S-CAL® calibrator kit being used.

Calibration Factors

Values the system uses to fine-tune instrument accuracy.

Carryover

The percentage or particle count (for Diff and Retic) of blood cells that are retained from one blood sample to the next.

Cassette Clips

Clips that you permanently install in each opening of the special cassettes for tubes with HEMOGARD™ Closure. These clips allow the special cassette to accommodate additional types of tubes.

CBC (Complete Blood Count)

A measure of the cell number and the indices. CBC includes WBC, RBC, Hgb, Hct, MCH, MCHC, Plt, MPV, and RDW.

CD4

Cluster Designation # 4.

A group based on monoclonal antibodies of similar molecular weight and protein composition. Monoclonal antibodies in a CD group tag or mark similar cells in similar ways. CD4 is expressed predominantly on the surface of T4 lymphocyte cells.

CD8

Cluster Designation #8.

A group based on monoclonal antibodies of similar molecular weight and protein composition. Monoclonal antibodies in a CD group tag or mark similar cells in similar ways. CD8 is expressed predominantly on the surface of T8 lymphocyte cells.

CDC

Centers for Disease Control and Prevention.

CEE

Commission for Electrical Equipment.

Cell Control

A preparation made of human blood with stabilized cells and surrogate material. It is used for daily instrument QC.

Characters

All letters A-Z and numbers 0-9.

Check Valve

A one-way valve that routes liquid or air through the Diluter.

Also called: mono-flow valve, one-way valve

CLIA

Clinical Laboratory Improvement Amendments.

cm

Centimeter, a unit of linear measurement.

Codes

On windows and printouts, symbols, such as **+++++** and **– – – – –** , that appear in place of sample or control results because of irregularities.

Coincidence

More than one cell within aperture-sensing boundaries at the same time. The system counts only one pulse and automatically corrects results for coincidence.

Collation

The process of combining the results of different test modes (CBC/Diff and Retic) analyzed from the same sample.

Command Center

A blue bar that appears at the bottom of the screen. It displays:

- Buttons that start the GEN•S System applications
- Instrument name and processing control fields that control what kind of data the Workstation expects to receive
- Bar-code ID for Manual aspiration mode
- Progress and system status indicators
- Last message posted to the history log that caused a stop condition
- Manual aspiration mode sample ID field.

Control Disk

A data diskette that contains the assay values for the lot number of the control being used.

COULTER FACULTY System

A computer program that uses the results from a COULTER instrument, demographic information, and supplementary test information to provide suggested follow-up testing and possible diagnoses.

Also called: knowledge-based system.

Coulter Principle

A method of counting and sizing cells by detecting and measuring changes in electrical resistance when a particle in a conductive liquid goes through a small aperture.

Critical Limits

Values established by your laboratory to flag results requiring immediate action.

CSA

Canadian Standards Association.

Cursor

On the screen, a place shown by a little blinking indicator or by a highlighted area. The cursor shows where you can select an option or type information.

CV (Coefficient of Variation)

An expression, in percent, of data spread as related to the mean.

%CV = (SD/Mean) x 100

Cycle Counter

A number that appears on the Analyzer MAIN MENU screen that represents the actual number of instrument cycles that have occurred.

DataPlot

A graphic representation of results. DataPlots present a combined view of population density and membership. Colors represent different types of cells. Shades of colors represent the number of cells--bright colors are the most dense.

Default

A setting the instrument uses automatically. For example, you can set up a default printer. Every time you print sample results, the Workstation automatically prints the sample results to the default printer.

Definitive Messages

Definitive messages that appear for sample results based on numeric limits generated by your laboratory. If results exceed the limits, the Workstation generates a message. Results that generate these messages may require review. Check your laboratory's protocol for handling the particular message.

Delta Check

A check on sample results that is made by clinical laboratories to determine if the current result on a particular patient is within certain limits of the last result obtained on that same patient.

Density

The number of cells in a particular region, regardless of the type of cell.

On DataPlots, as more cells appear in a region, the color of the region gets brighter.

Diff (Differential)

Leukocyte differential parameters (NE, LY, EO, BA, and MO) and processes that relate to them.

The differential count for all parameters, when totaled, equals 100% except when ALL differential parameters display as zeros. If the differential count displays all zeros, check for additional flagging and take appropriate action according to your laboratory's protocol.

Digits

All numbers 0-9.

dL

Deciliter, a unit of volumetric measurement equal to 0.1 liter.

Double-click

Using	Means
Light Pen	Quickly pressing the light pen against the screen twice.
Mouse	Quickly pressing the left mouse button twice.
Touch Screen	Quickly touching the screen with your finger twice.

Drag

The process of selecting an item and maintaining the selection while you move the pointer to a different location.

EDTA

Ethylenediaminetetraacetic acid--the recommended anticoagulant for hematology analysis.

Expiration Date

A manufacturer's recommended last day of use for a reagent, control, or calibrator.

Field

Area on a window or screen for entering or viewing data. When you move the cursor, you are moving it from field to field.

fL

Femtoliter, a unit of volumetric measurement equal to 10^{-15} liter.

Flags

On windows and printouts, letters, such as H, L ,and R that appear next to parameter results to indicate specific conditions.

Flow Cytometry

A process for measuring the characteristics of cells or other biological particles as they pass through a measuring apparatus in a fluid stream.

Function Key

One of the keys labeled F1 to F12. To request a system or window-specific command, press the Function Key displayed on the screen next to the command. Sometimes these keys are used with other keys to access specific functions.

g

Gram, a unit of weight.

Hemoglobinometry

Measurement of hemoglobin in the blood. In the GEN•S System, this is done by comparing the amount of light that passes through a diluted lysed sample, in which the released Hgb has been chemically converted, with the amount of light that passes through a blank (ISOTON® III diluent).

Histograms (RBC & Plt)

Graphic representations of cell frequency vs. size. Histograms provide information about erythrocyte and thrombocyte frequency and their distribution about the mean. They also might show the presence of subpopulations.

Hz

Hertz, a unit of frequency.

i.d.

Inside diameter.

IEC

International Electrical Commission.

Information System

Any host or laboratory computer system.

Instrument

The Analyzer and Diluter portion of the GEN•S System.

IQAP (Interlaboratory Quality Assurance Program)

Coulter Corporation provides this program, which statistically compares your 5C® and Retic-C cell control data to a group of other laboratories' control recovery data with the same control lot number.

L

Liter, a unit of volumetric measurement.

Lab Administrator

A person at your location who can access the full set of Workstation functions. The lab administrator creates user names and assigns access levels. A specific user name and password is assigned to the lab administrator in your laboratory.

Laser (Light Amplification by Stimulated Emission of Radiation)

The instrument uses a laser for WBC Diff and Retic analysis.

Levey-Jennings Control Chart

A commonly used control procedure in which control measurements are plotted directly on a control chart with limit lines drawn as mean plus or minus expected ranges.

Linearity

The ability of an instrument to recover expected results (reference values or calculated values) for such parameters as WBC, RBC, Hgb and Plt at varying levels of concentration of these parameters within specified limits.

Coulter Corporation provides the LIN-C™ linearity control for your convenience. Use it according to the instructions on its package insert.

Lot Number

An identifier assigned by a manufacturer to identify a control, reagent or calibrator.

m

Meter, a unit of linear measurement.

Manual aspiration mode

The open-vial method of running a sample. You immerse the aspirator tip in the sample. The instrument automatically aspirates the sample. If the instrument fails to aspirate automatically, you can press and release the activator to aspirate the sample.

Also called: open-vial mode, secondary mode, manual sampling mode.

Manual Diff Box

A blank area included on a report where you can record your manual differential results for the sample.

Manual Print Job

Selecting the print button to print a single item.

Mean

Arithmetic average of a group of data.

Membership

The different types of cells in a particular region, regardless of the number of cells.

On DataPlots, membership is represented showing different types of cells in different colors.

mL

Milliliter, a unit of volumetric measurement, equal to 10^{-3} liter.

mm

Millimeter, a unit of linear measurement, equal to one-thousandth of a meter.

Mode-to-Mode Matching

Agreement between patient results in Automatic aspiration mode and Manual aspiration mode.

mW

Milliwatt, a unit of power equal to one-thousandth of a watt.

n

Number.

NCCLS

National Committee for Clinical Laboratory Standards.

NEMA

National Electrical Manufacturers Association.

nm

Nanometer, a unit of linear measurement, equal to 10^{-9} meter.

o.d.

Outer diameter.

Outlier

A data value far outside the range of the rest of the data.

Output Device

A physical device that is capable of receiving information from a computer and formatting it in a logical fashion. Examples: printer, fax machine or another computer.

Parameters

Characteristics of blood that the instrument measures and reports.

Parity

Method of detecting errors in data handling. The computer generates a parity bit such that the sum of the data bits for a data word are odd or even and stored in the parity bit for checking by the receiver of the data word.

Patient Population

A large number of patient sample results for XB Analysis, used to give a fairly consistent average result for each of the three red blood cell indices: MCV, MCH and MCHC.

pg

Picogram, a unit of gravimetric measure equal to one trillionth of a gram.

Photometric Measurement

A process where a beam of white light from an incandescent lamp goes through an optical filter and is read by a photocell. This generates a current that can be measured.

Plt Histogram

A Plt distribution curve. It displays only the area between 0 fL and 36 fL.

Positive Identifier

An identifier that is linked irrevocably to the date and time of instrument analysis on a sample and the sample results. A positive identifier must be entered before a sample analysis can occur. You can use either sample ID or Cass/Pos as positive identifiers of the sample and its results. You can also choose to use both sample ID and Cass/Pos as positive identifiers.

Precision

A measure of the ability of the instrument to reproduce similar results when a sample is run repeatedly. Precision of the instrument is a CV (or an SD for differential results), based on at least 31 replicate determinations of the same sample. Precision shows the closeness of test results when repeated analyses of the same material are performed.

Also called: reproducibility.

Precision Test

The precision test is performed as part of the automatic startup cycles. If any test value exceeds the reference value by 1% or more, the test value appears in red on the Workstation screen and is flagged with an H (high) or L (low). If an H or L flag appears:

1. Verify that clean diluent covers the apertures and that no bleach or cleaning agent is in the baths.
2. Repeat the precision test at the Analyzer.
3. If the flag recurs, call your Coulter Representative.

psi

Pounds per square inch, a unit of pressure measurement.

QC (Quality Control)

A comprehensive set of procedures your laboratory uses to ensure that the instrument is working accurately and precisely.

Ramp Test

The ramp test is performed as part of the automatic startup cycles. If any test value exceeds the reference value by 1% or more, the test value appears in red on the Workstation screen and is flagged with an H (high) or L (low). If an H or L flag appears:

1. Verify that clean diluent covers the apertures and that no bleach or cleaning agent is in the baths.
2. Repeat the ramp test at the Analyzer.
3. If the flag recurs, call your Coulter Representative.

RBC Histogram

An RBC distribution curve. The normal curve ranges from 36 to 360 fL. The display starts at 24 fL.

Record

A collection of related information, for example, sample identification and results information, stored in the database and treated as a unit.

Reflex Manager List

A list automatically generated by the Workstation based on sample result criteria set up by your laboratory. You can use this list as a management tool to allow automation of post-analysis decisions. As part of setting up the Reflex Manager List, you define the decision criteria and the follow-up action required.

Print Profile

A set of characteristics that define what you want printed and transmitted for sample runs. You can set up print profiles as part of System Setup.

Also called: Reports, Reporting Options

Reportable range

This range represents the clinical limits of values that have been tested and found to be accurate, precise, and linear. Reportable range can be the same as the linear range, but it is usually a subset of the linear range.

Reproducibility

A procedure to check that the system gives consistent results (within established limits) every time it measures the same sample. Also called: precision.

Sample ID

One of two possible positive identifiers for sample analysis. The other possible positive identifier is Cass/Pos.

For Automatic aspiration mode, this identifier is read from the bar-code label of the sample. For samples using Manual aspiration mode, this is the identifier specified at the Diluter Keypad or read from the bar-code label on the sample by using the wedge scanner.

Screen Saver

The Workstation has a screen saver that appears when you are not interacting with the Workstation. You can set up the screen saver to appear at specific intervals of non-use.

The screen returns to its normal view when the Workstation receives sample data or when you interact with the Workstation by pressing a key on the keyboard, touching the screen or using the light pen.

SD (Standard Deviation)

A measure of deviation from the mean.

$$SD = \sqrt{\frac{\Sigma(x - \bar{x})^2}{n - 1}}$$

Shift

1) Consecutive values that abruptly move from one side of the mean to the other, then maintain a constant level. Contrast with trend. 2) A scheduled period of work.

Status Bar

A horizontal bar that appears toward the bottom of the screen. It displays short instructions that can help you work with the GEN•S Workstation. It also displays information about various GEN•S options.

Stop Bit

A computer code that indicates the end of a character.

Suspect Messages

Suspect messages appear for sample results based on an abnormal cell distribution or population. The system generates these messages according to an internal algorithm. Abnormalities should be confirmed by microscopic review.

Sweep Flow

A steady stream of diluent that flows behind the RBC aperture during sensing periods to keep RBCs from swirling back into the sensing zone.

Test (Modes)

At the Analyzer, you specify the test mode. It determines how the GEN•S System processes data. The GEN•S System has the following test modes:

CBC	Performs basic complete blood count on whole-blood samples.
Retic	Performs Retic analysis on whole blood samples.
CBC/Diff	Performs complete blood count and WBC differential on whole-blood samples.
CBC/Retic	Performs basic complete blood count and Retic analysis on whole-blood samples.
CBC/Retic/Diff	Performs basic complete blood count, WBC differential, and Retic analysis on whole-blood samples.

The test mode appears as a field on the QA Results & Graphics window.

ToDo List

A feature of the Workstation that lets you view a list of samples the instrument has not yet processed. You can view a list of all the unprocessed samples or a list of unprocessed samples for a particular test mode. You can sort these lists by any column you choose.

Also called: Worklist, Pending List, Work Order.

Toolbar

A group of graphic buttons on a Workstation window. You can select a button on a Toolbar to quickly access commonly used functions.

Trend

Values that continue to increase or decrease gradually over a period of time. Contrast with shift.

Tube Adapters

Special holders that enable small tubes to fit in standard cassettes. Two sizes of gray sleeve adapters accommodate 2.0-mL tubes and 3.0-mL tubes.

UL

Underwriters Laboratory.

User Name

A 16-character identifier that uniquely identifies the processor of the samples. If you forget your user name or password, contact your lab administrator. The user name works with your password to uniquely identify you to the system.

Also called: operator ID.

Vac

Volts of alternating current.

VCS (Volume, Conductivity and Scatter)

A flow cytometry technology applied in hematology to enhance WBC subpopulation classification and percent Reticulocyte measurement.

Voting

After the computer corrects for coincidence, it compares the three count periods. Voting may occur for WBC, RBC, Plt, MCV, RDW and MPV. Agreement among the three count periods causes them to be averaged to determine the parameter result.

If the instrument finds disagreement among all three count periods, the Workstation displays the total voteout code, – – – – –, instead of the parameter result.

W

Watt, a unit of power.

WBC Threshold Monitor

A WBC distribution curve. The WBC histogram displays a visual representation of interference around the 35 fL threshold. A marker appears at the threshold to help you determine the degree of particle interference.

Window

A rectangular area on your computer screen that enables you to work with an application.

Windows NT™ Workstation Operating System

The Microsoft® operating system for your computer.

Workstation

The computer hardware and software that controls instrument operation; displays, stores, and recalls sample data; automates QC and calibration procedures; and assists you in troubleshooting.

Also called: ADMS, DMS, GEN•S Workstation.

XB Analysis

A method of quality control that automatically compares patient red blood cell indices (MCV, MCH and MCHC) with known target values. It is used to monitor for proper operation of automated instruments in hematology.

µL

Microliter, a unit of volumetric measurement equal to one millionth of a liter.

µm

Micrometer, a unit of linear measurement equal to one millionth of a meter.

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